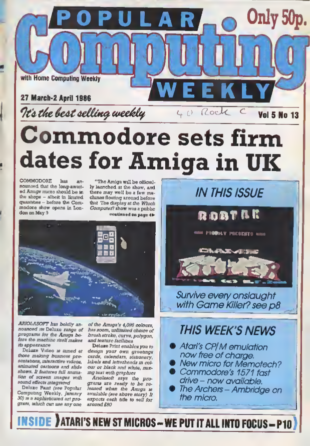


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Vol 5 No 13

Commodore sets firm dates for Amiga in UK

COMMODORE has announced that the long-awaited *Amiga* micro should be in the shops – albeit in limited quantities – before the Commodore show opens in London on May 9

"The Amiga will be officially launched at the show, and there may well be a few machines floating around before that The display at the *Which Computer?* show was a public

continued on page 4▶

ARIOLASOFT has boldly announced its Deluxe *range of programs for the Amiga before the machine itself makes its appearance*

Deluxe Video *is aimed at those making business presentations, interactive videos, animated cartoons and slide shows. It features full animation of screen images with sound effects integrated*

Deluxe Paint *(see* Popular Computing Weekly, *January 30) is a sophisticated art program, which can use any one of the Amiga's 4,096 colours, has zoom, unlimited choice of brush stroke, curve, polygon, and texture facilities*

Deluxe Print *enables you to design your own greetings cards, calendars, stationery, labels and letterheads in colour or black and white, mixing text with graphics*

Ariolasoft says the programs are ready to be released when the Amiga is available (see above story) It expects each title to sell for around £80

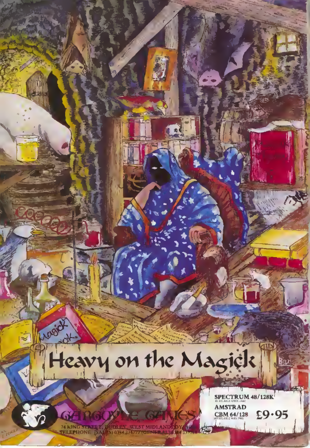
IN THIS ISSUE

Survive every onslaught with Game Killer? see p8

THIS WEEK'S NEWS

- Atari's CP/M emulation now free of charge.
- New micro for Memotech?
- Commodore's 1571 fast drive – now available.
- The Archers – Ambridge on the micro.

INSIDE) ATARI'S NEW ST MICROS – WE PUT IT ALL INTO FOCUS – P10)


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CONTENTS

Vol 5 No 13

EDITORIAL

At least we have a firm idea of exactly when Commodore intends to release the Amiga in the UK – formally at the Official Commodore Show, starting 9 May, and informally a few machines through selected outlets beforehand.

Having got hardware dates sorted out, the next query on everyone's minds will inevitably be how much software the companies can bring out quickly. The bane of every machine, whether compatible with its predecessors or a completely new system, is always the lack of software at launch.

Specifically, any home orientated micro will require some well-known, good quality games almost immediately. A new micro with business pretensions needs at least a word processor, database, spreadsheet and an accounts program to be going along with. Chris Kaday, Commodore UK's acting general manager, expects the first three, plus a graphics package (probably Ariolasoft's *Deluxe Paint*) to be ready and waiting. An accounts package, he says, will be lacking at first. A music composer and synthesiser, to take advantage of the Amiga's sound capabilities may also take a while. We can, he assures, expect a fair bit of software, if only because the machine has been available in the US for around six months now. So the situation is no worse, and probably a bit better than most micros with no compatibility (leaving the Amiga's IBM emulator aside) with any other.

The other main worry over the Amiga in the UK is who it's going to sell to. It certainly isn't going to be the home user here, not at first, and at £1500 Kaday cites "the traditional business dealer", which seems a bit of a waste of the all-singing, all-dancing Amiga. He goes on to state that the education market is "a priority" – an area where Apple (whose Macintosh occupied the same sort of psychological 'slot' as the Amiga a couple of years ago) and Apricot, at similar pricing, have also tried, with limited success. Kaday then talks of desktop publishing, graphics stores and ad agencies, niche markets.

At that rate, it's going to be a long time before the UK Amiga, when available, is going to get anything like the high profile it has received before it is available, when we all hoped it would be at a price the computing individual could afford, credit card companies willing.

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ABC

Computer Trade Association Magazine of the Year

Amiga dates

◄ continued from page 1

preview but when we announce it on May 9 the machines will be there to buy," said Chris Kaday, Commodore UK's acting general manager.

He also said that one of Commodore's priority marketing areas for the Amiga, which will be a 512K, twin-disc system in the UK, will be in education. "While we will



Amiga: education a priority

start with the traditional business dealer – if they still exist – we have also got educational distributors specifically to tackle the educational market, particularly the higher education sector. A number of universities already have Amigas."

Chris Kaday also admitted that Commodore was considering selling its premises in Corby, following the closure of its assembly plant (see *Popular Computing Weekly*, January 9). Only 160 people are now employed at Commodore UK. "We have huge premises here," he said. "We could sell, and then lease back those parts which we want. We've got people looking at it now."

However, he would make no comment at all regarding the repayments of Government grants given to Commodore when it moved to Corby, because of Corby's status as a steel-closure town.

Atari supplies CP/M emulation free

ATARI ST owners will now be able to get the ST CP/M emulator free of charge.

When the software emulator was announced at the recent Atari Computer show (see *Popular Computing Weekly*, March 13), it was expected to be available as a retail software package at an equivalent to its US price of $50 (about £35).

"At that time, we had not decided whether to follow the route they took in Germany, which was to offer it free, or sell it as they do in the US," said Atari UK's marketing manager Rob Harding.

"Now we are going to issue the emulator to all our dealers. The scheme is intended to give ST owners access to CP/M public domain software, of which a number of titles are available on a 3½ inch disc format.

"We are also negotiating with major CP/M manufacturers to have their copyrighted titles put on to 3½ inch discs."

The free emulator should be available within two weeks. Anyone wanting the package should take a blank 3½ inch disc to their local Atari dealer, who will put the emulator software on the disc for them.

All change at Memotech

CHANGES are in the air at Memotech as the company prepares for a substantial relaunch.

The company's financial backers are apparently pulling out, and a new Memotech will be restarted with the current technical director, Geoff Boyd at its head. The company is now going through a six-week stock checking and handover period.

A spokesman for Syntaxsoft, a software company which has worked closely with Memotech in the past, said, "We have been told they will be trading again from April 1."

It is widely thought that Boyd also has a new computer, similar to the MTX models but with better disc facilities, to be unveiled shortly.

Memotech has had a disappointing history. Its machines, the MTX500 and MTX512, have never sold well, despite being highly regarded for their design and specification.

Modem company in Channel Four probe

CHANNEL Four's consumer investigation programme, *For What It's Worth*, recently highlighted problems people have had with the now defunct company modem manufacturer Unicom.

According to Unicom customers appearing on the programme, the company had debited their credit cards, but never supplied the goods. The programme also claimed that at least one customer had been overcharged on his credit card account for a Demon modem he ordered.

When Unicom collapsed, its co-owner John Jones, who was also managing director of the Rushworth Dales group, set up a company called Demon Products and continued to sell the modem, *FWIW* said.

John Jones himself told *Popular Computing Weekly*: "It is significant to say that only tens of people lost money over Unicom. I'm very sorry for them, but the circumstances aren't as enormous as they were made to seem."

On the question of overcharging, he added: "What some people had done was to order the modem and software and not include the software in the amount – or the VAT in some cases."

But Jones's partner at Unicom, Barry Krite, the inventor of the Demon, who now heads Datastar Systems, told *Popular Computing Weekly*: "There was certainly plenty of substance to the programme – I've been trying to get the story told for ages. I've been trading for years in mail order with no complaints, but on that project there was nothing but aggro."

ZX Microfair in May

THE date of the next ZX Microfair has been announced as Saturday, 10 May, at its now regular venue, London's Royal Horticultural Hall – near Victoria Station.

Mastertronic launches Madchrome label

MADCHROME is the name of another new label from budgeteer Mastertronic.

Following the success of MAD games, priced at £2.99, Madchrome titles will also be that price.

"Like the MAD range, Madchrome will include games that we feel are of especially high quality, but they will be in a completely different style to the MAD range. Many of the MAD games have featured big cartoony characters – the new titles will look more polished," explained Mastertronic's Alison Beesley.

The first title in the new range will appear next week. Called *Countdown to Meltdown*, it is a rerelease of an old Creative Sparks program. Ironically, Alison Beesley says it is not a typical example of the new range.

Mosaic computerises The Archers

FOLLOWING last year's *Secret Diary of Adrian Mole*, Mosaic Publishing is set to delve deeper into soap opera scenarios with the release this year of its sequel, *The Growing Pains of Adrian Mole*, and also a computer game based on the radio serial *The Archers*

Both titles will be programmed by adventure specialist Level 9, however, the scripts for *The Archers* – which Mosaic is calling an "interactive fiction game" – are being written by the radio programmes' editor William Smethurst

These two games will not be available until the autumn, when they will be released for Spectrum, Amstrad and Commodore machines

Mosaic's first release this year will be *The Snow Queen*, a text and graphic adventure based on Hans Christian Andersen's fairy tale

Robotic arm

SPECTRAVIDEO, manufacturer of the best selling Quickshot joysticks, is moving into the futuristic toy market

Its Robot Arm is designed for younger children, and gives a range of movements including grabbing objects and holding them, and scooping things up

The Robot Arm is computer controlled, and Spectravideo plans to make interfaces available for Spectrum BBC, Commodore and Amstrad machines. The Arm will cost £39 95 Details from Spectravideo, 165 Garth Rd, Morden, Surrey (01-330 0101)

Commodore 1571 disc drive now in shops

COMMODORE says its long-awaited 1571 disc drive is now available in the shops

The 1571 is a fast drive, but double-sided where the 1570 is single-sided It is the 1571 which is incorporated in Commodore's 128D machine. It was originally intended to be launched with the 128, but Commodore brought out the cheaper 1570 in a last minute change of plan

The stand alone 1571 costs £269, the same price as for the C128 itself

Popeye bounces back on Spectrum

POPEYE, the game licensed by DK'Tronics but never properly released, has now reappeared courtesy of MacMillan Publishing

Apparently DK'Tronics wanted to develop its hardware catalogue in favour of software, and sold its rights in *Popeye* to MacMillan

The game is available for Spectrum 48K and the 128 MacMillan is also working on Commodore and Amstrad versions for later this year

Palace stirs Cauldron II

CAULDRON II, a sequel to the successful *Cauldron* is to be released by Palace Software on 23 May

The new game is similar in style to its predecessor – an arcade adventure with 128 screens where as a pumpkin, your task is to destroy the witch featured in the original game

The original *Cauldron* was recently voted game of the year by the French computer games magazine, *Tilt* and has sold over 75,000 copies

Cauldron II will be priced at £8 99 and released initially on the Commodore, although Palace plans to bring out Amstrad and Spectrum versions about a month later

Letters

Correct heads

I am writing to you hoping one of your readers can solve a very frustrating problem.

I have owned a Commodore 64 for over a year During this time I have used the C2N Datassette to load software Recently some games have started not to load I have tried using an alignment tape on the C2N, but can never set the heads exactly correctly

Could it be the C2N motor revolving too slowly or do I need to replace the heads? I have heard that newer model heads tend to be inferior Can anyone suggest somewhere that repairs C2N

Andrew Nightingale
Griffithstown
Pontypool
Gwent

Disc additions

BBC Micro users with discs may be interested to know that Sunil Jagota's *Under the Mortuary* game (8-27 February 27th issues) can be loaded and played from discs with a few modifications

The following changes/additions should be made to the Basic instruction progam.

Add the line *91If page< > &3800 Then Page=&3800 Chain "3 Mortuary"* (or whatever name you have called the instruction program)

Change line *160*Load Prog 1200*

Add lines.

```
162*Tape
164f=&12t=&C,b=&26
o=&70
n&72.P%=&880 (OPT0
LDA#0 STAo
STAn LDA#f
STAo+1 LDA#tSTAn+1
LDX#b  A LDY#0
 B LDA(o),          Y STA(n),
Y INY BNE
B JMP&2C35 )
166Call &880
```

Line 164 moves the &2508 bytes of machine code (actually &2600 bytes are moved) from &1200 to &0C00 and jumps directly to the game itself

This is a general-purpose routine, tucked away in a quiet corner of the Beeb's memory (the printer buffer), which could be used to move any non-overlapping block of memory Notice that only one pass is required since there are no forward label refersences The important variables are

f—(from), hi byte of old start location / low bytes assumed

t—(to), hi byte of new start location / to be zero

b—(bytes), hi byte of the number of bytes to move

This simplifies the routine by only dealing with blocks of 256 bytes

I hope you find these changes useful

A J Hulley
Hemel Hempstead

Bugged games

I recently read an article in an American trade magazine. It was reported that a Professor Aoth had been studying the existence of bacteria in I/Cs

Apparently the small voltages present help to support certain life forms There are various types, but they all seem to belong to the genus Prollofis. In a random test of over 1000 chips the bacteria were found to be present in 63% of them.

Further tests showed that no apparent harm could be detected in either the human operators or the computers in which the bacteria was found. It does, however, lead to the conclusion that over 60% of programs really do have bugs in them

So the next time that game won't load or the mega game you are working on suddenly crashes, you know what to blame

M Sleight
Doncaster

I hope you're going to kill off Dan Archer as humanely as possible

Power supply

I have been asked by a member of my family living in France to obtain a power supply for a Memotech MTX 500

I have tried at several shops, but they could not help Can you?

Josiane Alexander
London E6 4RY

Memotech's telephone number is Witney (0993) 2977, although you will probably get an answerphone reply. You could also try UK Home Computers, which sells Memotech equipment on Swindon (0793) 695034.

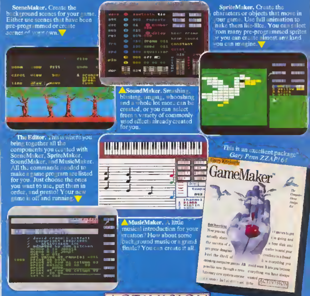
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A solution . . .

Hardware *Robtek Game Killer* **Micro** CBM64, C128 in 64 mode **Price** £14 95 **Supplier** Robtek, 36 Market Place, Falloden Way, London NW11 6JP, Tel 01-208 0118, available through chain stores and specialist retailers

Some call it cheating but it's certain that whenever a particularly complex new arcade game appears, close on its trail there will be a rash of Pokes and infinite life routines designed to make it easier to play Up until now only those with a reset switch and a good knowledge of machine code have been able to exploit such techniques, but with the help of Robtek's *Game Killer* dedicated gamesters can now gain so unfair advantage over many Commodore 64 games

The *Game Killer* is a cartridge similar in appearance to Robtek's *Turbo Programming* utility packages It plugs into the 64 (or 128 in 64 mode) and on powering up, produces an all-singing, all dancing title screen featuring music by the very wonderful Rob Hubbard.

Pressing the space bar resets the machine, and you can now load any tape or disc based program as normal Despite certain comments on the BBC's *Micro Live* programme I haven't yet found a program which fails to load normally with the *Game Killer* in place

The cartridge works by disabling the 64's sprite collision routines As most of you will know, the 64, unlike most micros which rely on "soft" user-defined graphic routines, has hardware sprites This makes it in many ways an ideal games machine, since game characters can be easily designed and made to interact

This interaction consists of a number of "priority" and "collision" hardware routines which allow programmers to make sprites appear to pass over each other, or over a background The 64 can also be programmed to register when sprites collide with each other, or the background in many arcade games this is the technique used to activate "death" routines

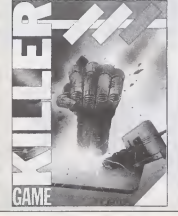
The *Game Killer* simply disables the sprite collision routines, making it impossible in some cases for your player to be "killed" By pressing the cartridge's reset button, all the routines are disabled, and after a short interruption the game resumes at the point you left it You can also opt to disable either the sprite-to-sprite or sprite-to-background routines only Having achieved the desired effect the *Game Killer* can then be switched off by pressing the reset button while holding down the joystick fire button

It's going too far to claim that the *Game Killer* is the perfect solution to all difficult arcade games Many games do not use sprite routines all – *Mercenary*, *Elite*, and so on – while many which appear to use hardware sprites actually use software routines (*Uridium* for instance)

However, with games on which the cartridge does work the effect is shattering With *Who Dares Wins 2* you cannot be shot, and can walk over water; with *BMX Rider* you can ride straight through the landscape, with *Transformers* you can ignore the attacks of the Decepticons, with *Impossible Mission* you can walk straight through the guardian robots

At £14 95, just the price of two games, I can't see any dedicated games player not wanting to buy the *Game Killer* Although it isn't a miraculous solution to all games, it's certainly magic – and as for cheating, well, all's fair in love, war and computer games .

Chris Jenkins



Easy to use

Program *XRom Eprom Programmer* **Micro** Any Amstrad CPC **Price** £69 **Supplier** Timatic Systems, Fareham Market, Fareham, Hants.

Rom software on the Amstrad computers hasn't reached quite the same epidemic proportions as it has on the BBC, principally because you have to buy a board with sockets before you can even use them Even so the number of available Rom programs has been slowly growing and it was inevitable the Eprom programming hardware would follow As is the way with such things, several have begun to be advertised at the same time, but the Timatic board appears to be cheaper than all but one and included in the price are three spare Rom sockets, freeing you from the need to buy a separate utility to use the resulting chips

The driving software for Timatic's Eprom board also has more relevance than most to the home user – although it will allow you to duplicate purpose written Roms for commercial sale, it also provides some marvellously easy to use software options You can put your own Basic or machine code programs onto Rom, as long as they take up less than 16k. The Roms that use this option copy the software back into Ram so that although they are accessible instantly they do not free more memory room for data

On the other hand the programs are then editable and you don't have to worry about learning all the ins and outs

of Rom/Ram switching 8k and 16k Roms can be used

The board is an extraordinarily well constructed piece of hardware It is enclosed in a solid metal case and connects to the CPC by a ribbon connector, allowing it to fit any model of machine The connector has a through bus for other hardware The four Rom sockets, one containing the menu driven XRom software, each have switch selectable Rom numbers, real switches rather than little plastic links The Eprom to be programmed is set into a separate Zero Insertion Force socket

You are provided with a very reliable looking (ie, nothing like a Sinclair power pack) 9 volt power supply that only needs to be connected if you are programming the Roms, not if you are just reading them.

There are one or two minor criticisms, the documentation is short on explanation in some areas, and, although you have the option to set the Rom size in blocks of 256 bytes, which can save time if you are Roming a short program, it would be nice if you also had the option for selecting between a full 8 or 16k chip On the whole, though, it is a quality product that has proved to be a surprisingly useful and useable peripheral particularly with its ability to Rom your own Basic programs.

Tony Kendle

High quality

Hardware *Spectrum RGB Output Module* **Micro** Spectrum and Spectrum+ **Price** £34 95 or £36 95 with through connector **Supplier** Adapt Electronics, 20 Starling Close, Buckhurst Hill, Essex

This interface is intended to enable Spectrum users to connect their computers to monitors with RGB inputs in order to obtain higher quality display than possible with a domestic TV set

Many computers already have this facility built in, for example, the BBC micro, the QL and the Orics Coincidentally, it is possible to use a BBC micro RGB lead as long as it has 6 pin DIN plugs at both end – I used the lead supplied with a Microvitec monitor

Since the necessary RGB outputs are not in themselves present on the Spectrum, the unit decodes the YUV outputs from the Spectrum edge connector The review model had to be 'tweaked' as per the instructions supplied, using a small screwdriver to adjust a trimmer component through a small hole in the box, to obtain a good, clear, steady picture This adjustment is quite easy to carry out

Once adjusted, the picture is clear and steady, although one Spectrum connected refused to co-operate and consistently gave a snowy picture A small red LED labelled SYNC lights up if all is well. Some early issue 1 Spectrums (identified from serial numbers supplied) require internal modification by soldering three wire links across marked places on the circuit board This does not affect the Spectrum's use with a TV set.

The model reviewed had no through port, so that it was not possible to connect any other devices unless they had their own through connectors Adapt Electronics can supply a version with a through connector at a slightly higher price

Power is taken from the Spectrum's edge connector and, therefore, a separate power supply is not required The outputs are "True TTL/Analogue Outputs With Composite Syncs" which means that it should be possible to connect the interface to most monitors and TV sets with RGB inputs, provided that you have a suitable cable. Do not be surprised if the *Bright* command appears to have no effect – this would be quite normal with many RGB monitors since they cannot respond to varying brightness input All eight Spectrum colours are shown correctly with barely a trace of colour crawling The difference it makes to the picture has to be seen to be believed!

Dilwyn Jones

Atari's spring collection

The ST range is growing – John Cook previews the new machines

Guessing exactly what Atari would launch next became something of an industry hobby last year, with various ST configurations being mooted and then changed as marketing caught up with R&D. Does anyone remember the 130 ST and 260 STs?

Also, Atari seems to have shot itself in the foot with the 'numbers and letters' syndrome – 520 STM and 1040 STF don't exactly roll off the tongue. But luckily, this doesn't stop these two recent launches from being machines that will generate a great deal of interest in the home computing world and possibly beyond.

Let's deal with the new 'entry level' machine of the ST range, the 520 STM – the last of the letters referring to the new addition, a TV modulator. That's right, you are no longer obliged to purchase a monitor with your ST, you can hook it up to your existing telly, which obviously won't be adequate for the likes of word processing and hi-res graphics, but will work well enough for medium and low resolution work.

According to Atari, this will provide, "a greater opportunity for consumers to purchase a 16-bit micro for a mere £399". Well, not quite, as purchase of a disc drive is obligatory if you actually wish to run anything on it – that'll cost you another £150. Still, £550 is still a great deal cheaper than the price of an old ST system.

The 520 STM comes with *ST Basic*, *Logo*, *1st Word* and *Neochrome* – like the old ST but you'll have to buy the D-Master One database as extra. Naturally, the 520 STM also has a monitor output for when you eventually upgrade.

Apart from the addition of the modulator, the major difference in the new machine is the fact that TOS now resides in Rom. This decreases the booting time dramatically, down to about six seconds from nearly 40 when loading from disc. No significant changes have been made to the operating system itself, except the code has been trimmed down to 192K.

Physically identical to the old ST in all other respects – other than the new modulator output – the new machine has all the potential strengths of the previous 520, and with an ever growing software base – it's obviously well worth a look if you're looking to upgrade.

So what about the new 'top of the range machine', the 1040 STF. The first thing you notice is the lack of wires and boxes adorning your workstation – this is because Atari has done the sensible thing and put everything in one box – power supply, disc drive, the lot. This makes the unit a couple of inches deeper, and around 4½ lb heavier.

The 3½ inch drive is located on the right-hand edge of the machine and is double density, double sided, allowing 720K of storage. However, it will read both single and double-sided discs.

Its positioning relegates the joystick and mouse ports to just under the front, righthand side of the unit. This is no handicap to operation – in fact, once again, it looks neater and more professional than before.

Like the 520 STM, TOS is now installed in Rom – but the big difference (and the big selling point) is the expanded memory, increased to 1 Megabyte, configured as 32 Ram chips.

All that extra memory . . . I can see ex-owners of the ZX81 drooling at the thought, and it's all directly addressable by the main processor. On the other hand, when did you last write a program bigger than 20K?

One of the main applications for large amounts of Ram is the creation of a Ram-disc – transferring the contents of a disc into memory, and thus cutting down on all the access time wasted whenever you want some information from the disc.

Unfortunately, this facility has not been directly built-in to the 1040 STF and although third-party programs exist that will provide a Ram disc, it can be regarded as something of an omission on the part of Atari.

However, at the end of the day, extra memory means extra potential – as long as the commercial software, or your own programming abilities, are up to it.

The machine comes in two packages, one with monochrome monitor (£919) and one with colour (£1,149). It would seem to make sense to introduce a 1040 STFM to allow purchasers of the black-and white system access to colour at a lower price.

A number of interesting things do seem to be on the immediate horizon – for starters, a CP/M emulator. Available free from dealers (you just take your disc along and get a copy), this will let you run CP/M 2.2 software on your machine. And when you start to think of the large numbers of public domain programs that exist right now – plus the many commercial programs – this taps the ST into a large software supply. Although not much of it is presently available on the 3½ inch format, Atari is doing its best to rectify that problem.

Atari has also set a tentative date of August for the release of a co-processing unit which will plug into the DMA input of either machine. This will have an Intel 8088 chip and 512K of Ram on board, accepting a 5¼ inch floppy disc, and will allow the ST to run IBM and IBM-compatible software. With provisional pricing in the £200-300 range, this looks an exciting specification, although the extent of compatibility and its actual performance have yet to be tested.

There is a rumour of a 'blitter' chip that would plug straight into the 1040 STF's main board – and greatly enhance screen handling. At the moment Atari says this is "speculation ... but sometimes speculation has a way of coming true". Watch this space for details. And the much mooted CD Roms? It looks like these have been delayed indefinitely, until the price of dual digital/ audio CD players comes down to a level "suitable to a mass market product".

So what does all this activity mean to the ST range? Does it make an ST a better buy? Should you be interested in 16-bit computing in the first place?

The future of home computing is certainly going to be 16-bit based – eventually. But at around £1,000 for the top of the range machine, the ST is still very much an enthusiast's system. Atari is aware of this, and so the entry level 520 STM may well prove to be a good move.

Although a fair range of software is now available for ST owners, Atari has also been smart in offering compatibility with other systems (CP/M and IBM).

But this spring, the ST range seems to have come of age – Atari making the right moves, and the price is starting to come lrt range of lesser mortals. Yes, other 68000 machines exist but if you want one now, for less than £1,000, then the ST le the main contender.



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Disc changes

Program *Alternate Reality* **Micro** Atari **Price** £14.95 **Supplier** US Gold, Unit 10, The Parkway Industrial Estate, Heneage St, Birmingham.

The packaging is very modest, it says 'The Ultimate role playing fantasy Game' Pretty impressive stuff, I thought, as I began loading the first of two double sided discs.

On starting this adventure, you are presented with a very well designed initial sequence which lasts for well over five minutes and you could almost be forgiven for thinking that you're looking at the credits of a major movie. Titles roll by accompanied by an impressive soundtrack and action sequences until finally we are at the doorway to the city, where all will be revealed – the city of Xebec's Demise. This is where you have been transported to after being kidnapped by an alien spaceship – a room with only one exit. Overhead is a panel displaying constantly changing numbers, when you pass through the door the numbers freeze and there you have your levels of stamina, charm, intelligence, wisdom, skill and wealth.

Using your joystick you explore the three dimensional city, visit the taverns, battle n'er do wells, discover treasure – everything a worthy adventurer would do. Your goal? Return to earth or seek revenge on your abducters.

Creation of your character is very easy, but living long enough even to have a quick pint in a tavern is hard going.

The main criticism of this game is the incredible amount of disc changing. It completely ruins the atmosphere to be informed every few turns, "please insert Disc 2 Side 1" (or vise versa). I can only put this down to bad design by the author. Indeed, I changed discs five times, at the start only to be told finally that I'd died! I shall persevere however, as I am sure somewhere there is a good game – you've just got to find it.

Andy Moss

Of the elite

Program *Wanderer* **Micro** QL **Price** £19.95 **Supplier** Pyramide (France) Rio Promotions Ltd, 26 Waverley Grove, London N3 3PX.

Since *Psion Chess* was launched over a year ago on the QL, there have not been many three dimensional pieces of software to match Psion's high standards of graphics. However, Pyramide, a new software house from France, have just issued *Wanderer*. A three dimensional space game with plenty of twists.

The first twist, and the most unwelcome is that the 3D graphics are plotted by an algorithm that draws two separate lines of different colour to simulate the depth of the line. To see such graphics, you have to wear silly 3D specs, that after a few hours, hurt your eyes.

The second twist is that the game is almost identical in style to the world famous *Elite*. With the wire figures moving about the screen, the player has to be able to fight off all invaders, hostile battle ships, travel across the galaxy as well as being a good tradesman.

The type of tradesmanship involved is the ability to sell a better card deal to ten different planets that play poker together. The better the deal you give the planets, the more galactic currency you receive. This currency for an unknown reason is dead cats.

The whole object of the game is to do enough trading, and fight enough battles, to increase your score. Once done your rating will go up and if you are of sufficient calibre you may try to take on the Black Holes and eventually the deadly Sphinx until you reach a rating 10.

The controls are a little awkward if you do not have a joystick because, if you wish to move your spaceship's viewpoint up, down or rotate it, you have to use the function keys as well as the cursor key to go forward or slow down. As it is a very large and realistic adventure, one would expect to find a *Save* facility, but this nearly vital facility is missing.

I am very impressed with the graphics, despite the glasses, and action is never far away with over 30 different types of enemy to battle with. This certainly is another notch up for QL software and an excellent start for Pyramide.

Matthew Palmer

Who's there?

Program *ID* **Micro** Spectrum **Price** £7.95 **Supplier** CRL, CRL House, 9 Kings Yard, Carpenters Rd, Stratford, London E15

Since *Deus ex Machina*, Mel Croucher has been pretty quiet. He split from Automata to 'concentrate on some new ideas', and presumably this release from CRL's new label Nu Wave is one of them. It's a sort of Eliza program given a different orientation in that you play psychiatrist and must discover through questioning who the intelligent life force that has taken residence within your Spectrum really is.

Its past is a mystery, although you know it has lived many different lives, and its memory is shattered. In order to unlock the mysteries of its past and get it to function in a normal manner, it has to trust you implicitly and by talking to it via your keyboard, answering its questions and generally making it feel good, your trust percentage will rise until finally a few clues will begin to pop out. Talking to the program is pretty limited and I found, a lot of the time, ID telling me "I don't understand that" which, let's be honest, is always going to be the problem in an Eliza program with limited memory facilities.

Its questions were also a bit strange, like "Are your parents alive?" – not the sort of question I might like to answer if I was a bit sensitive.

Mel Croucher has a wonderful imagination and dreams up some fabulous ideas, but I must say I found *ID* quite tedious. The lack of variation (until very late on in the game) left me feeling quite bored. Unless you have great patience, and enjoy fighting with a restricted vocabulary, give it a miss.

Andy Moss

Aquaquest

Program *Aquanaut 471* **Micro** QL **Price** £19.95 **Supplier** Microdeal, 41 Truro Road, St Austell, Cornwall PL25 5JE

Pure text adventures become boring when a curt description of the location is all that is supplied to help your quest. Microdeal's *Aquanaut 471* is the first text adventure that incorporates full graphic displays and even small arcade style games.

The game starts in a submersible that plunges to the depths of the ocean in search of an oceanic station.

This is a difficult task as the amount of air in your aquanaut limits your life, unless you reach your station in time. Then you have to dock at the station.

You are faced with a simple arcade game that allows you to move the ship across the waters to the port of call, at the same time avoiding obstacles. Once safely docked, you can start to explore the station.

Throughout the game you are faced with a number of problems that seem relatively hard, as well as the arcade games that test your agility. The cursor keys have been specially defined to allow single key entry for directional movement, but complex operations have to be typed in by the more common method of sentence construction.

Though as adventures go this is not the most difficult, if you enjoy solving problems and playing arcade games, get it if you can afford it.

Matthew Palmer

Useful

Program *New Paper Clip* **Micro** Commodore 64 **Price** £44 95 **Supplier** Ariolasoft 68 Long Acre, Covent Garden, London WC2.

There is a growing trend nowadays to look for more serious applications for home computers Having saved the universe at least twice and bashed a few Orcs people are realising that just maybe their electronic box can serve a useful function.

Having realised that yes there is going to be a demand for business packages, software houses are releasing a number of word processing programs for the home user One of the most complete systems is *New Paper Clip* from Ariolasoft Presented as 'The Professional Word Processor' it certainly lives up to the big billing The package comes in a very neat box set, along with an 128 page manual which contains a well written 11 lesson tutorial for the first time user. Sample documents are included on disc for practice and it soon becomes plain that *Paper Clip* has been designed with ease of use as a paramount feature

Most commands are issued via single key instruction, even a complicated feature like a 52 phrase recall facility is performed by just two keystrokes All the standard WP features are present along with underlining, bold face, italics, subscript and superscript. There is one drawback in owning a powerful word processor like this and that is the standard of your printer You need to have a pretty decent printer in order to be able to use features like italics or bold face text There is also a facility in the directory for changing the character set or typing in French, however, I couldn't get it to work.

This apart, *Paper Clip* is an impressive program and when included with Ariolasofts' other business related releases (*The Consultant* for instance) can prove to be an invaluable asset.

Andy Moss

More scrolls

Program *Ark Pandora* **Micro** CBM 64/128 **Price** £9 95 **Supplier** Rino Marketing, 1 Orange St, Sheffield.

This game, classed as a graphic adventure, would I think be better described as an arcade adventure Basically the idea behind the game is that you have been imprisoned for life on a remote fantasy island. The inhabitants release you on the condition that you set them free by defeating the high priest of an evil cult

To do this you will need to find the Sacred Scroll. Various objects will help you to achieve this while assorted nasties will try to stop you. The game is icon driven, which tends to confuse matters at first, but once mastered it makes the controlling of the character quite easy

The main action takes place on the top half of the screen, where considerable time and effort have gone into producing some very good graphics (the main character does some amazing forward rolls)

The bottom half of the screen contains your energy level, score and icons Moving your cursor over the various symbols and pressing the fire button will allow you to do such actions as picking up and dropping objects, check the inventory, save and load game play, use an object and restart from the beginning Using the Look icon a subpicture will tell you what perils lie in the various directions If there is danger in the direction in which you are heading, the direction icon, which is normally green, turns red.

Other features available are the option to play on in an old game and a screen designer to enable you to design your own graphics

Overall I found the game to be quite addictive and it should appeal to the arcade adventure enthusiast. My only criticism is that at £9 95 it is a bit overpriced.

R. Garrett

Old hat

Program *Revenge of the C5* **Micro** Spectrum 48K **Price** £1 99 **Supplier** Atlantis Software Limited, 19 Prebend St, London N1

I thought the C5 was dead And I thought – at least I hoped – that C5 jokes were equally defunct. So when I was handed this package, with its cover illustration of Sir Clive's glorified trike bursting through a pink financial newspaper, my reaction was 'Wishful thinking on behalf of Sinclair loyalists – that three-wheeled white elephant couldn't tear through a wet copy of The Sun '

The game plot concerns Clive riding in a race over 40 stages, but it's not a *Pole Position* copy This is strictly bird's eye view as Sir C swerves through the screens of a winding course to avoid bikes, wheels, even ghosts which can cause fatal crashes – and they told us it was safe! Controls provide three angles of turn and an accelerator and there are 'learners' and 'posers' modes, crashes return you to the start in the latter

All unsophisticated stuff then, and the flicker of certain sprites, and attribute problems where they just shouldn't be, hardly make it game of the year But here, despite my aversion to the dated central 'joke', despite the lack of polish, despite everything I have to admit I found it horribly addictive For some reason, getting to know each new stretch of road with its attendant hazards, so that you can plan a route through the forks, is just the thing for a few untaxing hours Just what a budget game should be for 1% of the price of the C5

John Minson

Lost art

Program *Labyrinthion* **Micro** Spectrum 48K **Price** £1 95 **Supplier** Budgie Budget Software, 1 Orange St, Sheffield.

At first, this offering from Budgie Software looks quite promising However, that old adage "You can't tell a budgie by looking at the cover" strongly applies here.

We are informed that we have entered a labyrinth of death where we may wander in a timeless suspension of danger and mystery The basic plot is to find nine parts of a scroll which, when found, will inform us how to escape from the labyrinth. But wait, don't be misled by the attractive packing and tempting blurb, this game is a typical example of appearances being deceptive

If this game had been released about four years ago one or two people may have bought it Even at the low cost I still feel it's overpriced.

R. Garret


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EXTENDED BASIC

by Eric Deghaye

Last week we saw how to include our own small routines into the basic interpreter and how to fit them in the 'skeleton' program. However, one big item was missing: all our modules were totally independent of the outside world, they did only one repetitive thing. We were able to change the colour but were unable to specify which colour we wanted. What we need is a way of passing numerical values/variables to our modules

Calling the routine at $0073 on its own is not much use, as it will return a character. But within Commodore's Basic there are routines that do the job perfectly and can be used in our modules. You really want to use a listing of the Basic and kernal Roms to find them all, but I can show you a couple.

The easiest one to use is at *B7F1; it checks for a comma and transfers the next value found into X. To fetch the first value you need to do a JSR $0073 first

The listing included uses the same 'skeleton' as the program last week, but rather than just listing the modules, the whole program is listed so that the changes required to include your own modules mentioned previously are apparent.

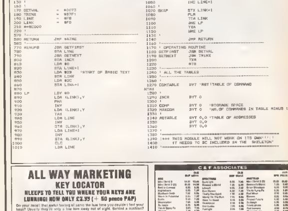
!c,[value]	changes the cursor colour to the value given
!s,[val],[val]	changes the colour of border and screen to the values given
!t,[val],[val]	puts the cursor at the given horizontal and vertical coordinates

For example try this !c,8 (characters will turn orange), !s,1,0 (white border with black screen), !t,16,16 print "hello mum" (prints on centre of the screen)

Also included is a renumber module. You can include it in the skeleton by doing the appropriate modifications such as number of commands present in the table, updating the commands table, etc. Use the renumber routine with !r,[start],[increment]. (Note this does not change the Gotos and Gosubs.)

Writing your own modules should then not be too difficult using the routines mentioned above. I have written routines that give music commands, or which perform very fast sorts of arrays, and I include these as a block of data statements poked in the memory at the start of big programs – such as a database.

```
100 !==============================================
120 ! -- BASIC EXTENSIONS NUMBER 4 --
140 ! -- PASSING VALUES TO THE ROUTINES --
160 !==============================================
180 !
200 !  "C,VALUE" CHANGES THE CHAR COLOR
240 !  "!S,VAL,VAL" CHANGES THE SCREEN COLOR
245 !  "!T,VAL,VAL" TABS IN X AND Y THE CURSOR
260 !
300 GETVAL          = $0073
301 TRINX           = $B7F1
302 *=$C000
320 !
340 !----------------------------------------------
360 ! RESET THE BASIC LOOP VECTOR
380 !----------------------------------------------
400 !
420             LDA #<CHECK
440             STA $0308
460             LDA #>CHECK
480             STA $0309
500             JSR SETABLE
520             RTS
600 CHECK       JSR GETVAL       !CHECK FOR CONTROL CHAR
620             CMP #33
640             BNE EXIT
800             JSR GETVAL
820             STA COMP         !SAVE THE POTENTIAL COMMAND
840             LDX MAXCOM
860 LOOP        LDA COMTABLE,X   !GET POSSIBLE COMMAND
880             CMP COMP         !IS IT THIS ONE?
900             BEQ GETADD       !YES THEN..
920             DEX
940             BPL LOOP
960 EXIT        JMP $A7E7        !EXECUTE LOOP
980 !
1120 GETADD     TXA
1140            ASL A            !DOUBLE THE VALUE
1160            TAX
1180            LDA ADTABLE,X    !GET ADDRESS OF ROUTINE
1200            STA $FB          !STORE IT IN ZERO PAGE
1220            LDA ADTABLE+1,X
1240            STA $FC
1260            JMP ($FB)        !GO TO OUR ROUTINE
1280 !
1290 !----------------------------------------------
1291 ! THE NEW ROUTINES
1292 !----------------------------------------------
1540 RETURN     JMP $A7AE
1560 !
1580 CHAR       JSR GETFIRST
1582            STA 646
1584            JMP RETURN
1588 !
1590 SCREEN     JSR GETFIRST
1570            STA $D020
1572            JSR GETNEXT
1574            STA $D021
1586            JMP RETURN
1600 !
1600 TAB        JSR GETFIRST
1602            PHA
1604            JSR TRINX
1606            PLA
1608            TAY
1610            CLC
1612            JSR $FFF0
1614            JMP $A7AE
1620
1640 !
1700 !
1740 !
1762 !----------------------------------------------
1764 ! OPERATING ROUTINE
1766 GETFIRST   JSR GETVAL
1768 GETNEXT    JSR TRINX
1770            TXA
1772            RTS
1780 !----------------------------------------------
1800   ALL THE TABLES
1820 !----------------------------------------------
1840
1860 COMTABLE   BYT "CST"                   TABLE OF COMMAND
NTAX
1880 !
1900
1920 COMP       BYT 0        !STORAGE SPACE
1940 MAXCOM     BYT 2        !NB OF COMMANDS IN TABLE MINUS 1
1960 !
1980 ADTABLE    BYT 0,0      !TABLE OF ADDRESSES
2000            BYT 0,0
2020            BYT 0,0
2040 !
2200 SETABLE    LDA #<CHAR
2220            STA ADTABLE
2240            LDA #>CHAR
2260            STA ADTABLE+1
2280            LDA #<SCREEN
2300            STA ADTABLE+2
2320            LDA #>SCREEN
2340            STA ADTABLE+3
2360            LDA #<TAB
2380            STA ADTABLE+4
2400            LDA #>TAB
2420            STA ADTABLE+5
2440            RTS
2460
```



```
100  '==================================================
110  ' -- RENUMBER MODULE/COMPONENTS--
120  '==================================================
130  '
140  '
170 GETVAL        =   $0073
180 TRINX         =   $57F1
190 LINE          =   $FB
200 LINK          =   $FD
210 *=$C000
220  '
570  '------------------------------------------------
580 RETURN         JMP $A7AE
585  '------------------------------------------------
770 RENUMB         JSR GETFIRST
780                STA LINE
790                JSR GETNEXT
800                STA INCR
810                LDA #0
820                STA LINE+1
830                LDA $2B    'START OF BASIC TEXT
840                STA LINK
850                LDA $2C
860                STA LINK+1
870
880 LP             LDY #0
890                LDA (LINK),Y
900                PHA
910                INY
920                LDA (LINK),Y
930                TAX
940                LDA LINE
950                INY
960                STA (LINK),Y
970                LDA LINE+1
980                INY
990                STA (LINK),Y
1000               CLC
1010               LDA LINE
1020               ADC INCR
1030               STA LINE
1040               BCC SKIP
1050               INC LINE+1
1060  '
1070 SKIP          STX LINK+1
1080               PLA
1090               STA LINK
1100               BNE LP
1110               TXA
1120               BNE LP
1130  '
1140               JMP RETURN
1160  '------------------------------------------------
1170  ' OPERATING ROUTINE
1180 GETFIRST      JSR GETVAL
1190 GETNEXT       JSR TRINX
1200               TXA
1220               RTS
1230  '------------------------------------------------
1240  ' ALL THE TABLES
1250  '------------------------------------------------
1260  '
1270 COMTABLE      BYT 'RBT'TABLE OF COMMAND
NTAX
1280  '
1290 INCR          BYT 0
1300  '
1310 COMP          BYT 0   'STORAGE SPACE
1320 MAXCOM        BYT 0   'NO.OF COMMANDS IN TABLE MINUS 1
1330  '
1340 ADTABLE       BYT 0,0 'TABLE OF ADDRESSES
1350               BYT 0,0
1360               BYT 0,0
1370  '
1380  '==================================================
1390  '*** THIS MODULE WILL NOT WORK ON ITS OWN''''!
1400      IT NEEDS TO BE INCLUDED IN THE  'SKELETON'
1410  '==================================================
```



General terms

This week I'll run through the rest of the glossary started last week, and also go over a few more general terms.

Serial

(i) Refers to an interface used for serial data transmission. The RS 232 and RS 423 are the most common serial interfaces.

(ii) A method of data transmission where each bit making up each of the binary Ascii values of each character is sent on its own.

For example, to transmit the character A, first its Ascii value is worked out – 65. This is then converted into binary – 1000001 and each digit is sent on its own. First the 1, then a 0, then another 0 until the last digit is transmitted, the 1.

Serial transmitting is cheaper than parallel transmitting.

Spool

Some software will give you the option of spooling to disc (tape is too slow and not usually used). This means that all incoming data is sent to the disc and a 'file' is built up containing all of the data.

Sysop

This stands for SYStem OPerator, he or she is the person who runs the BB. They have to buy the software and hardware and make sure that it doesn't break down. Many Sysops are available to talk to and most are friendly, provided you have sensible questions (most Sysops are fed up with the fact that about 99½% of the people who ask for a chat have nothing to say).

TBBS

The name of a popular piece of software on which many BBs are run. It runs on a Tandy and was one of the first pieces of BB software on the market. TBBS stands for The Bread Board Software.

Teletext

This is a broadcast Videotext system, using the spare lines on a TV transmission. As this is broadcast over the air waves, this is a one way systenm and the user cannot transmit data to the host computer.

TX

Abbreviation for Transmit

Videotext

An information system where the information is displayed on a screen, eg, the TV

Viewdata

(i) A Videotext system which uses the phone lines to transmit data. Since phones are a two way device, it is possible for the user to send data to the host computer. BBs are an example of viewdata.

(ii) *Viewdata Format*. This is the name given to a BB which runs on the CommuniTel or similar software. Prestel is also an example of a viewdata format BB.

Modem-specific Jargon

Ans Orig

When two modems are communicating at a full duplex speed, where both the Tx and Rx speeds are the same (ie 300/300 but not 1200/75) then it is *better* to have one set for Ans and one for Orig. Ans = Answer. Orig = Originate.

Auto-Answer

The modem will listen in on your phone line and if there is an incoming call it will answer and do what ever the software tells it to. There are two types of auto-answer available on a modem.

Ring Detect – The modem will 'tell' your computer that there is an incoming call and will not answer if, (1) the computer is not ready, (2) it has been set not to, or, (3) it is not connected to the computer.

Dumb Answer – The modem will answer the phone whatever. The computer could be turned off but the modem will still answer.

Auto-baud scan/select

The modem will select the speed of the BB and set itself to the correct speed.

Auto-dial

The modem will do the dialling. All you do is tell the computer the number and it does the rest.

Bell

The name of the tones used in the USA. The whole world uses CCITT standard – except the States.

British Telecom approval

British Telecom (BT) owns all of the phone lines in Britain (with the exception of Kingston upon Hull, which is private). So what it says goes. The BABT undertakes to test all telecommunications equipment for approval, mainly with regard to the device's safety. No piece of equipment can be approved in this country until it has passed the BABT's tests.

By law prohibited telephone equipment can be bought, but should not be attached to your phone line. If it is then BT will ask you to remove it, and you risk being disconnected if you do not. Also BT states that you risk damaging your approved equipment if you attach unapproved equipment to it. A round green sticker is given to approved equipment, while a triangular red sticker is put on prohibited equipment.

Hacking

A hacker, in the specific sense, is someone who is capable of using a computer and a modem to break into another computer and discover the passwords.

There is a lot of confusion about hacking and whether it is criminal. Certainly, hackers do it for the fun of it and not for personal gain, whereas a computer criminal does it for either personal profit or to cause loss of data to others.

The trial of Robert Schifreen and Steven Gold under the 1981 Forgery and Counterfeiting Act, concerning 'hacking' into Prestel comes up at Southwark Crown Court, on April 14, which may legally redress that definition.

I hope that long list proves useful, and if you wish to know about something which is not listed then write to me, c/o *Popular* at the address below.

I've received some letters from people who have trouble logging on to 1200/75 baud boards. If you have a modem such as the VTX 5000 which has only got Prestel compatible software then it is not possible to log on to a BB, which is not Prestel compatible (ie, does not run in Viewdata format).

If you have a modem which is only available to allow you to access other BBs. If you have a VTX 5000 then Stephan Adams has written two pieces of software at £5.95 and £8.95 which you can use. Contact him on 01-254 1869.

Now for this week's BB top 10

	Name	Baud rate/format	Number
1	[illegible]	300/300	[illegible]
2	[illegible]	300/300 [illegible]	[illegible]
3	Metrotel	1200/75 Viewdata	[illegible]
4	CABB	1200/75 & 300/300	[illegible]
5	[illegible]	1200/75 Viewdata	[illegible]
6	Marotel	300/300 & 1200/75	[illegible]
7	CBBS – SW	300/300, 1200/75	[illegible]
8	Vulcan Board	300/300 & 1200/75	[illegible]
9	Communitel Board 1	1200/75 Viewdata	[illegible]
10	Dark Crystal	300/300 & 1200/75	[illegible]

Now for some new BBs.

There is the London Underground, which is both 1200/75 and 300/300 baud. The number is 01-863 0138 and it's on-line 24 hours a day.

Next there's Telemac 15 which is also 1200/75 and 300/300 baud. The number's 0625-33703 and it's also 24 hours a day.

Pete's Palace BB is only 300/300 baud, but it is 24 hours a day and the number's 0206-862354.

For those of you in East Anglia there's East Anglia BBBS. You can ring it on 0001-388634 between 2400hrs and 0800hrs. Lastly for those of you who only have Viewdata format software (which is 1200/75) there's EDWEB on 0285-52348.

David Wallin

If you have any queries, tips or comments to make about any aspect of micro communications, David Wallin would love to hear from you.

Write to him at *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 7PP

Evesham Micros

PRINTER OFFERS

Look at these deals on centronics printers we believe that these prices offer the best value in the country. All prices include recorded delivery, despatch is within 48 hrs of receipt of order provided goods are in stock. A printer lead is supplied to suit your micro free of charge (please specify Amstrad, BBC, Oric, Dragon, Einstein, CBM64 or Memotech) for Spectrum or QL owners we will supply with an appropriate interface for an additional £30.00.

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ONLY £129.95

Price inc cables lead to suit your micro or to suit Spectrum with Kempston centronics "E" interface £160.95

SHINWA/MICRO P. CPA 80 +

NOW WITH NEAR LETTER QUALITY MODE

Improved specification makes this, the mode include of this popular model, the outstanding printer buy in its class. As well as it's normal superb print quality at 100cps (better than the NLQ on many rival models) it now has an NLQ mode which offers even better print quality. This can be switched to easier from a front panel NLQ switch or from software. Other modes are friction and tractor feed, external dipswitches, genuine correct descenders, needle print head (giving our entry look to print) and Epson compatibility.

ONLY £189.95

Price includes Centronics lead to suit your micro. Or to suit Spectrum with Kempston "E" interface £200.95.

TAXAN KAGA KP810

Recently introduced into our range due to public demand this premier printer is essentially the same as the CANON PW1080A. It includes a very high specification with superb print quality. Features include 160cps draft mode, 65cps correspondence quality (emphasised) and 27cps in it's superb NLQ mode. It has a 3K buffer. Proportional graphic modes, friction and tractor feed and is EPSON compatible. Take a look at the model also unretouched, print samples.

Near letter quality at 27cps

Correspondance quality at 65cps

Draft mode at 140cps

subscripts & superscripts

ENLARGED mode

ELITE mode gives 96 columns

Condensed mode lets you sqeeze a lot into a line

Good underlining

Plus many, many more features

Similar selling price for these printers is include the £300 mark. At our price they represent superb mode for money.

ONLY £219.95

Prices include Centronics lead to suit your micro. Or to suit Spectrum with Kempston "E" interface £230.95

MICRO P. MP165

This printer is a very high specification at an unbelievable price. It boasts 165 cps in draft mode and 75 cps in near letter quality mode which a switch or software selectable. It is friction and tractor feed as standard has a 2K buffer and is EPSON compatible (it even uses an EPSON ribbon). It can print in standard PICA 80 column, there is a variety of sizes from an enlarged 40 column mode to condensed at 132 column. Italics are available in all modes. Normally this printer would be expected to sell at £300 plus we are offering it at our ultra Low price inclusive of printer lead to suit BBC Amstrad, CBM 64, Oric, Dragon, Einstein or Memotech.

ONLY £249.00

Price includes Centronics lead to suit your micro. Or to suit Spectrum with Kempston "E" interface £280.00

COMMODORE OFFERS

COMMODORE 128D NOW IN STOCK, RING FOR PRICES

CBM 1541 DISK DRIVE	ONLY £149.95
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TRADE ENQUIRIES WELCOME



COLOUR PALETTE

by Nic Ford

A colour palette is a facility found on many of the modern computers, notably the Amstrad range. It allows complex graphic screens to be drawn "invisibly" and then revealed when ready. A rudimentary form of animation can be achieved very easily, and the software Flash routine that a palette allows can enhance screens of text no end.

The program below gives the ZX Spectrum such a facility. It is split into two machine code routines. The first is a new Print routine, which is in many forms similar to the old one – it uses, however, a second attributes file which it updates as necessary, and it also takes care of the new commands. The second routine uses interrupts, and updates the true attributes file whenever a pen colour is changed or a flash occurs.

The program uses commands which are accessed by the Basic Print command – this allows any form of 48K Spectrum to use the palette, and although this is still to a certain extent clumsy, it is a lot better than hundreds of Pokes and Rand Usrs. When in use, this form of command can actually be faster and take less Ram than an equivalent Basic command.

The colour palette uses a system similar to that found on the Amstrads – at least, to the user. Any text or graphics can be printed or drawn by any of 16 Pens. Each pen can hold one of the eight logical (normal) colours, or can be made to flash between two. The flash rate can also be changed at will.

Full descriptions of the new commands and their syntax will be given next week, together with a short demo program showing them off.

This week we present two programs. The first is a hex loader. Type this in and run it. Enter the text from the second listing, the hex dump, eight bytes at a time. Next enter the checksum. If there is an error you will have to type the line in again. When all the data has been entered it will be saved as "PALETTE".

To activate the palette, first Clear 63231, then Load "PALETTE" Code. Next, Randomise Usr 64257 to switch it on. Because streams one and nought use a different Print routine to stream two, any thing printed in the lower part of the screen may cause an abnormal flash. For this reason it is probably best to not use the palette other than from within a program.

```
Listing 1: Hex Loader
  10 DEF FN a(h$)=16*(CODE h$-48-7*(h$(1)>
     "9"))+CODE h$(2)-48-7*(h$(2)>"9")
  20 POKE 23658,8: FOR f=64256 TO 65016 STEP 8
  30 LET t=0
  40 PRINT f;")";
  50 INPUT h$: IF LEN h$<>16 THEN  GO TO 50
  60 PRINT h$;: FOR s=0 TO 7
  70 LET h=FN a(h$): LET t=t+h: LET h$=h$(3 TO )
  80 POKE f+s,h: NEXT s: PRINT "=";
  90 INPUT ch: PRINT ch
 100 IF ch<>t THEN  PRINT "Error!": GO TO 30
 110 NEXT f
 120 SAVE "PALETTE"CODE 64256,760
```

```
Listing 2: Spectrum Palette Hex Dump
64256)FDF32100FA1101FA=1047      64640)ED00AF32E0FDC0CD=1521
64264)01000136FDED003E=784       64648)FE0D1100F72120F7=843
64272)C332FDFD2160FB22=1176      64656)01E102ED0021E0F5=1147
64280)FEFD2100FE1101FE=1056      64664)011F0018DFA720D0=634
64288)01FF013600ED003E=700       64672)FE0120E3FEA5D2FA=1395
64296)FAEDA7ED5E01FF02=1147      64680)09FE7E1167FCCA00=1091
64304)2100F71101F73601=600       64688)0AFE18302AFE0530=692
64312)ED00AF32E0FD3C32=1225      64696)24FE0FDAF403201D=845
64320)ECFD2A1A5C110A00=572       64704)FE1330451 1CFDFE=550
64328)ED5220102A935C20=640       64712)16300311D4FC320E=626
64336)0100000C5CD5515C1=714      64720)5CC3000A111CFD32=773
64344)21E0FDE0082A4F5C=1155      64728)0F5CC3000A2A8F5C=717
64352)E02323A7ED52221A=851       64736)E5FD3656FFCDFA03=1335
64360)5CF0C9F5C5D5E53A=1496      64744)C12A045C20FD7056=553
64368)E0FDA7C295FDDDE5=1600      64752)7C0F0F0FE603C6F7=847
64376)DD2100F7010003 11=522      64760)673AECFD775F7CD4=1202
64384)00503AEDFDDD6E00=567       64768)9F673AEDFD571A77=1042
64392)DD2367EDA0EA05F0=1574      64776)C9329E5CD6108721=755
64400)32E0FDDDE121DFFD=1402      64784)EFFD3F1600195E23=763
64408)352019AF32E0FD2A=854       64792)56C3000A119DFCC3=1040
64416)DDFD7D6C5722DDFD=1310      64800)0A0ACD38FDFE1030=580
64424)32DFFD2AEDFD7D6C=1291      64808)2D87070707473AEC=950
64432)6722EDFDE1D1C1F1=1495      64816)FDE60F0032ECFDC9=1414
64440)C33800E7CD7A1CC3=1032      64824)119DFCC300ACD38=1020
64448)0723CD30FDFE0620=856       64832)FD47DFFE2C7020D4=1209
64456)10F93E7ECDDDFC3A=1185      64840)C3E7CD021CCD941E=1174
64464)0E5CCDDDFCF1C3DD=1461      64848)E16F22DDFDC5CF0A=1262
64472)FC3A0E5CE5DFFEAD=1280      64856)CD30FD47DFFE2C70=1226
64480)202EFE442832FE50=832       64864)200EFE1030FD3AEC=906
64488)C256FDC00AF0ED43=1400      64872)FDE6F00032ECFDC9=1633
64496)7D5CCDAA22470 43E=753      64880)FE1030E2F5E7CD02=1355
64504)FE0F10FD477EFD4E=1066      64888)1CCD941EFE003050=809
64512)57C0412001A0C051=832       64896)F5DFFE2C200AF1F5=1290
64520)2002A02F77C3F0FC=1055      64904)1000E7CD021CCD04=902
64528)CD00F0ED43705CC9=1365      64912)1EFE0030A3C1AFF1=920
64536)CD00F0D9C5D5E5D9=1716      64920)A72100FECD40FD40=1155
64544)7300300066905AF5F=947      64928)2100FFCDA0FDAF32=1142
64552)10000120306041D5=679       64936)E0FDC9F5C56FE506=1466
64560)1600607B1F053003=461       64944)107EE6F001777DC6=1235
64568)0C3807944FD9C1C5=1085      64952)106F10F5E1C001CB=1020
64576)10044FD5D9C12A70=897       64960)01C001C005C005EB=824
64584)5C70044 7793C053A=785      64968)05C00506107EE6C7=790
64592)12201 23D4FCDEEF0=910      64976)017723 10F8C1F1C9=1230
64600)D97310D9D1D9E1D1=1431      64984)CF13ED56C9191910=824
64608)C1D9C920EECF0A32=1156      64992)FF9DFCC415533C07=1031
64616)0E5C11C2F8C3000A=901       65000)3C070000 01FFFE50=676
64624)CDAF0D01FF022100=604       65008)FD22FD3EFD000000=855
64632)F71101F73AECFD77=1178      65016)00000000 0C36FB=553
```


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GAMES

TAROT READER

by David Muir

This is a simulation of fortune telling using a full 78-card Tarot pack and the popular Celtic Cross Spread. It is menu-driven at every stage.

The program is long because of all the data it holds. (The data is actually twice as long as the control program). The data includes information for 78 different card titles, different meanings for 78 cards, and 78 different pictures – so it's bound to be long – in any case we'll be printing it over two weeks.

If you find the idea of so much typing too daunting, the author can make tape copies available. Send your name and address plus £1.50 to cover handling costs to David Muir, 78 Peverell Park Road, Peverell, Plymouth PL3 4ND.

Please remember though, it's just a game and should be treated no more seriously than the horoscopes in daily newspapers. Some tarot cards may have frightening titles, but the meanings are rarely as bad!

```
20 GOSUB 420:GOTO 160
30 PRINT:PRINT"ENTER NUMBER"+CHR$(7):RET
URN
40 PRINT CHR$(7)
50 PRINT:PRINT"PRESS ANY KEY"
60 WHILE INKEY$<>"":WEND:WHILE INKEY$=""
:WEND:RETURN
70 IF dn(i)>37 THEN PEN 3:ds=INT((dn(i)-
38)/10):dc=dn(i)-38-10*INT((dn(i)-38)/10
):ON ds+1 GOSUB 640,650,660,670:ELSE IF
dn(i)>21 THEN ds=INT((dn(i)-22)/4):dc=dn
(i)-22-4*INT((dn(i)-22)/4):ON ds+1 GOSUB
 640,650,660,670:GOTO 140:ELSE 150
80 IF dc=0 OR dc=2 OR dc=4 OR dc=6 OR dc
=8 THEN LOCATE dx-3,dy-3:PRINT CHR$(255)
90 IF dc=1 OR dc=7 OR dc=8 OR dc=2 THEN
LOCATE dx-3,dy-2:PRINT CHR$(255):LOCATE
dx-3,dy-4:PRINT CHR$(255)
100 IF dc>2 THEN LOCATE dx-2,dy-1:PRINT
CHR$(255):LOCATE dx-2,dy-5:PRINT CHR$(25
5):LOCATE dx-4,dy-1:PRINT CHR$(255):LOCA
TE dx-4,dy-5:PRINT CHR$(255)
110 IF dc>4 THEN LOCATE dx-2,dy-3:PRINT
CHR$(255):LOCATE dx-4,dy-3:PRINT CHR$(25
5)
120 IF dc=9 THEN LOCATE dx-2,dy-4:PRINT
CHR$(255):LOCATE dx-4,dy-4:PRINT CHR$(25
5):LOCATE dx-2,dy-2:PRINT CHR$(255):LOCA
TE dx-4,dy-2:PRINT CHR$(255)
130 PEN 1:RETURN
140 CALL 39872,(38000+dc*72),37920:LOCAT
E dx-4,dy-4:PEN 2:PRINT USING "&";a8;:LO
CATE dx-4,dy-4:PEN 3:PRINT CHR$(255);:LO
CATE dx-4,dy-5:PRINT CHR$(75-6*(dc=1)-3*
(dc=2)-5*(dc=3));:PEN 1:RETURN
150 CALL 39872,(38288+dn(i)*72),37920:PE
N 2:LOCATE dx-4,dy-4:PRINT USING "&";a8;
:PEN 1:RETURN
160 MODE 1:INK 0,24:INK 1,1:INK 2,6:INK
3,18:PEN 1:PAPER 0:CLS:PRINT"SELECT CARD
 AS BASIS OF ENQUIRY":PRINT:PRINT"1. PER
SON":PRINT:PRINT"2. MAJOR CARD":PRINT:PR
INT"3. MINOR CARD":PRINT:PRINT"4. RANDOM
 CARD":GOSUB 30:dr=1
170 q$="":WHILE q$="":q=INKEY$:WEND:IF q=
"1"THEN 200 ELSE IF q="3"THEN 220 ELSE I
F q="4" THEN dr=0:GOTO 270:ELSE IF q<>"2
"THEN 170
180 CLS:FOR i=0 TO 21:PRINT i;m(i):NEXT:
GOSUB 30
190 INPUT q:IF q=""OR LEN(q)>2 THEN 180
ELSE f=0:FOR i=1 TO LEN(q):f=f+(MID$(q,i
,1)>"9"OR MID$(q,i,1)<"0"):NEXT:IF f<>0
THEN 180 ELSE d=VAL(q):IF d>21 THEN 180
ELSE dn(0)=d:n(0)=m(d):GOTO 240
200 CLS:FOR i=0 TO 3:FOR j=0 TO 3:PRINT
4*i+j;r(j);" OF ";s(i):NEXT:PRINT:NEXT:P
RINT:GOSUB 30
210 INPUT q:IF q=""OR LEN(q)>2 THEN 200
ELSE f=0:FOR i=1 TO LEN(q):f=f+(MID$(q,i
,1)>"9"OR MID$(q,i,1)<"0"):NEXT:IF f<>0
THEN 200 ELSE d=VAL(q):IF d>15 THEN 200
ELSE dn(0)=d+22:n(0)=r(d-4*INT(d/4))+" O
F "+s(INT(d/4)):GOTO 240
220 CLS:FOR j=0 TO 3:FOR i=0 TO 9:LOCATE
 1-20*(i>1),j+1-11*(i=1 OR i=3):PRINT 10
*i+j;l(j);" ";s(i);:NEXT:NEXT:PRINT:GOSU
B 30
230 INPUT q:IF q=""OR LEN(q)>2 THEN 220
ELSE f=0:FOR i=1 TO LEN(q):f=f+(MID$(q,i
,1)>"9"OR MID$(q,i,1)<"0"):NEXT:IF f<>0
THEN 220 ELSE d=VAL(q):IF d>39 THEN 220
ELSE dn(0)=d+38:n(0)=l(d-10*INT(d/10))+"
 OF "+s(INT(d/10))
240 CLS:PRINT"BASIS":IF dn(0)<22 THEN n(
0)=m(dn(0)) ELSE IF dn(0)<38 THEN n(0)=r
(dn(0)-22-4*INT((dn(0)-22)/4))+" OF "+s(
INT((dn(0)-22)/4)) ELSE n(0)=l(dn(0)-38-
10*INT((dn(0)-38)/10))+" OF "+s(INT((dn(
0)-38)/10))
250 PRINT:PRINT n(0):PRINT:PRINT c(dn(0)
,0):PRINT c(dn(0),1):PRINT:PRINT a7;:dx=
POS(#0):dy=VPOS(#0):i=0:GOSUB 70:SOUND 3
,130-i*10,10:LOCATE 1,16:PRINT "OKAY? (Y
/N)"
260 q=UPPER$(INKEY$):IF q="N"THEN 160 EL
SE IF q<>"Y"THEN 260
270 CLS:FOR i=26 TO 1 STEP -1:LOCATE 1,i
:PRINT USING "&";a5;:NEXT
280 PRINT CHR$(7);:FOR i=dr TO 10:RANDOM
IZE TIME:dn=INT(RND*78):LOCATE 1,11:PRIN
T"CHOOSE CARD";i;"(PRESS  ";CHR$(i+65);"
' KEY)";
290 WHILE UPPER$(q)<>CHR$(i+65):q=INKEY$
:dn=dn+1+76*(dn>76):WEND:k=1:dn(i)=dn
300 f=0:FOR j=0 TO k-1:f=f+(dn(j)=dn(i))
:NEXT:IF f<>0 THEN dn(i)=dn(i)+1+68*(dn(
i)=67):GOTO 300:ELSE LOCATE 39-i*3,1:PRI
NT USING"&";a6;:LOCATE 35-i*3,12:PRINT U
SING"&";a5;:SOUND 3,130-i*10,10:NEXT:LOC
ATE 1,11:PRINT"PRESS ANY KEY";SPACE$(20)
;:GOSUB 60
310 RESTORE 630:CLS:FOR i=0 TO 10:t=9:RE
AD dx,dy:LOCATE dx,dy:PRINT USING"&";a5;
:SOUND 3,130-i*10,10:NEXT:LOCATE 1,1:GOS
UB 50:CLS
320 FOR i=0 TO 10
330 IF fk THEN fk=0:RESTORE 630:FOR j=0
TO i:READ dx,dy:NEXT:LOCATE dx,dy:SOUND
3,130-i*10,10:PRINT USING"&";a7;:dx=POS(
#0):dy=VPOS(#0):i1=i:GOSUB 70:i=i1:GOTO
360
340 RESTORE 630:CLS:FOR i=0 TO 1:READ dx
,dy:LOCATE dx,dy:SOUND 3,130-j*10,10:PRI
NT USING"&";a7;:dx=POS(#0):dy=VPOS(#0):i
i=j:i=j:GOSUB 70:j=i:i=ii
350 NEXT
360 IF dn(i)<22 THEN n(i)=m(dn(i)) ELSE
IF dn(i)<38 THEN n(i)=r(dn(i)-22-4*INT((
dn(i)-22)/4))+" OF "+s(INT((dn(i)-22)/4)
) ELSE n(i)=l(dn(i)-38-10*INT((dn(i)-38)
/10))+" OF "+s(INT((dn(i)-38)/10))
370 LOCATE 1,1:PRINT SPACE$(31):PRINT SP
ACE$(13):LOCATE 1,1:PRINT n(i):PRINT "("
;a(i);")":PRINT "M - MEANING":IF i<10 T
HEN PRINT "N - NEXT CARD":ELSE PRINT "N
- NEW CARDS"
380 q=UPPER$(INKEY$):IF q="N" THEN fk=-1
:GOTO 400:ELSE IF q<>"M" THEN 380:ELSE C
LS
390 PRINT a(i):PRINT:PRINT n(i):PRINT:PR
INT c(dn(i),0):PRINT c(dn(i),1):PRINT:PR
INT a7;:dx=POS(#0):dy=VPOS(#0):GOSUB 70:
LOCATE 1,dy+2:SOUND 3,130-i*10,10:GOSUB
50:GOTO 340
```

```
400 NEXT:LOCATE 1,1:PRINT"1. RE-RUN";SPACE$(22):PRINT"2. NEW GO";SPACE$(4):PRINT"3. FINISH    ";PRINT SPACE$(13):GOSUB 30
410 q$="":WHILE INKEY$<>"":WEND:WHILE q$="":q$=INKEY$:WEND:IF q$="3"THEN END:ELSE IF q$="2"THEN 160:ELSE IF q$="1"THEN CLS:GOTO 320:ELSE 410
420 SYMBOL AFTER 256:MEMORY 37999:SYMBOL AFTER 246:DEFSTR a,s,c,n,r,m,l,q:DEFINT d,i,j,f:DIM dn(10),s(21),c(77,1),n(10),r(3),s(3),l(9),a(10)
430 MODE 0:INK 0,1:INK 1,24:CLS:SYMBOL 255,0,60,60,60,60,60,60,0:LOCATE 1,11:PRINT"  ";STRING$(16,255):PRINT"  ";CHR$(255);SPACE$(14);CHR$(255):PRINT"  ";CHR$(255);" TAROT READER ";CHR$(255):PRINT"  ";CHR$(255);SPACE$(14);CHR$(255)
440 PRINT"  ";STRING$(16,255)
450 RESTORE 510:FOR i=0 TO 21:READ c(i,0),c(i,1):NEXT:FOR i=22 TO 34 STEP 4:RESTORE 550:FOR j=0 TO 3:READ C(i+j,0):NEXT:NEXT:FOR i=0 TO 3:RESTORE 560:FOR j=22 TO 34 STEP 4:READ C(i+j,1):NEXT:NEXT:FOR i=38 TO 77:READ C(i,0),c(i,1):NEXT
460 FOR i=0 TO 21:READ s(i):NEXT:FOR i=0 TO 3:READ s(i),r(i):NEXT:FOR i=0 TO 9:READ l(i):NEXT:FOR i=0 TO 10:READ a(i):NEXT
470 RESTORE 600:FOR i=0 TO 1052:READ d:POKE 38000+i,d:NEXT
480 a1=CHR$(150)+STRING$(3,154)+CHR$(156):a2=CHR$(149)+STRING$(3,207)+CHR$(149):a3=CHR$(147)+STRING$(3,154)+CHR$(153):a4=STRING$(5,8)+CHR$(10):a5=a1+a4+a2+a4+a2+a4+a2+a4+a2+a4+a2+a4+a3:a6=CHR$(207)+CHR$(10)+CHR$(8)
490 a6=CHR$(154)+CHR$(10)+CHR$(8)+a6+a6+a6+a6+a6+CHR$(154):a7=CHR$(149)+SPACE$(3)+CHR$(149)+STRING$(5,8)+CHR$(10):a7=a1+STRING$(5,8)+CHR$(10)+a7+a7+a7+a7+a7+a3
500 a8=CHR$(246)+CHR$(247)+CHR$(248)+STRING$(3,8)+CHR$(10)+CHR$(249)+CHR$(250)+CHR$(251)+STRING$(3,8)+CHR$(10)+CHR$(252)+CHR$(253)+CHR$(254):RETURN
510 DATA IDEALISM IMAGINATION,UNWORLDLY FOLLY,WILL ABILITY MASTERY,MISUSE OF POWER,UNCONSCIOUS INSPIRATION, DECEITFUL WOMAN, FRUITFULNESS FERTILITY,SQUANDOR RESOURCES,AUTHORITY FATHER,TYRANNY DOMINATION,MORAL GUIDANCE,POMP CEREMONY,CHOICE DECISION
520 DATA WRONG CHOICE,SELF-CONTROL CONFIDENCE,CONCEIT ARROGANCE,HARSESEED EMOTIONS,EMOTIONAL STRAITJACKET,DETACHED IMPARTIALITY,LONELINESS SEPARATION,GOOD FORTUNE,MISFORTUNE,JUST REWARDS, PUNISHMENT,FRESH PERSPECTIVE, OUT OF TOUCH WITH REALITY
530 DATA FRESH PASTURES,GRASS IS ALWAYS GREENER,COMBINING SYNTHESIS,DISCORDANT ELEMENTS,VOLUNTARY SELF-RESTRICTION,NARROW VIEWPOINT,BREAKING OLD HABITS,COLLAPSE,VITALITY LIFE,MISDIRECTED ENERGY,FEELING INTUITION,ILLUSION,ENTHUSIASM JOY EXPECTATION
540 DATA THOUGHTLESSNESS,CELEBRATED SUCCESS,SELF-PROMOTION,ALL OPTIONS OPEN,INABILITY TO CHOOSE
550 DATA A MATURE MAN,A MATURE WOMAN,A YOUTH,A YOUNG GIRL
560 DATA PASSIONATE IDEALISTIC FAIR HASTY,DREAMY IMAGINATIVE GENTLE MOODY,INTELLIGENT DECISIVE CUTTING,PRACTICAL EARTHY STRONG DOUR
570 DATA BEGINNING NEW ENTERPRISE,NEW ROLE IN LIFE,DOMINION,POWER,VIRTUE,INTEGRITY,COMPLETION,FULFILLMENT,STRIFE,COMPETITION,VICTORY,RESPITE,VALOUR,OVERCOMING,HASTE,HOPE,STRENGTH,PREPAREDNESS,OPPRESSION,SELFISHNESS,NEW LOVE,RELATIONSHIP,LOVE,HARMONY
580 DATA ABUNDANCE,PLEASURE,ABSTENTION,SATIATED,LOSS,SORROW,NOSTALGIA,OLD FRIENDS,DISSIPATION,ILLUSION,ABANDONMENT,SACRIFICE,MATERIAL SUCCESS,WELL BEING, FULFILMENT,CONTENTMENT,FRESH CONQUEST,NEW AMBITION,TRUCE,TENSION,SORROW,SEPARATION,RESPITE,REST
```



RAINBOW

by Cy Noble

Over the next three weeks a multi-coloured painting program will be published. It will have a special colour fill facility with 35 basic colours and colour mixes, not counting black, available for use The program works in Mode 2 and either an analogue joystick or the cursor keys may be used. It works with either disc or cassette on the BBC B and Electron Please note that on the Electron you will need to change Line 250 to MODE 5

If you want to save your fingers you can send to me for a cassette (£10) or 5in disc (£11 50) or 3in. disc (£15) Disc buyers get a copy of this article (in Wordwise format) plus three demo pictures and a small program to display them and a !Boot file so that hitting *Shift/Break* will run the program for you My name and address are in the listing.

As memory is very tight I've not been able to include many Rems in the program for descriptive comments but I've given you a check sum for the assembled machine code If the code doesn't match the check sum you will need to check your listing carefully. Remember to save your program before running it in case of accidents

The first program (printed this week) contains abbreviated instructions on using the program, assembles the machine code and then chains the main program (printed later on) The addresses of the various routines are passed to the main program in the A% to Z% integers so the main program calls these addresses for colour fills, colour changes, GCOL options, etc. The last two are in a separate interrupt routine so they can be available at all times.

Each of the colours can be applied in five ways making 165 variations There are three 'Solid' fills and two 'Open' ones with each shade Open fills are done by leaving alternate lines in background black and any other colour pattern (except another Open one) can fill in the blank lines between stripes to produce yet another colour shade However, filling an Open colour with Solid bars or the basic mix of another colour produces the same pattern so there are 68 (ie, 3-1 × 34) other Solid colour patterns that brings the Open/other fill possibilities to (68 × 35) 2,380 Adding that to the 165 'basic' variations we get a grand total of 2,545 possible colours/colour patterns Probably many of these are duplicates or so similar as to be indistinguishable from each other, but in any case there are considerably more colours than the original eight (counting black).

Even more colour variations are available if you 'spray' random dots of colour over a previously coloured area so we can't really put a limit on how many colour variations are possible

```
10REM RAINBOW +
20REM By Cy Noble
30REM 323 North Circular Rd.
40REM London N13 5JH
50VDU21:IFPAGE=&1500 THEN120
60IFPAGE<&1500 THEN90
70*KEYOF Z%=0TO TOP-PA. 0,4:Z%!&1500=Z%!PA.:N.:PA.=&1500:MO.1M0.101M
80GOTO100
90*KEYOF Z%=0TO TOP-PA. 5,4:I%!&4000=I%!PA.:N.:PA.=&4000:MO.1M0.101M
100*FX138,0,128
110END
120VDU23,248,&F8,&88,&88,&88,&88,&88,&88,&F8
130VDU 23,249,&00,&38,&0C,&FF,&FF,&0C,&88,&00
140VDU 23,250,&00,&88,&C0,&E0,&88,&88,&88,&FF
150VDU 23,251,&00,&80,&C0,&E0,&F0,&F8,&FC,&FE
160VDU 23,252,&10,&28,&44,&44,&44,&44,&28,&10
170VDU 23,253,&10,&38,&7C,&7C,&7C,&7C,&28,&10
180VDU 23,254,&FF,&81,&81,&81,&81,&81,&81,&FF
190VDU 23,255,255,255,255,255,255,255,255,255
200scrmem=&70:screenadr=&72:trup=&A00
210escreen=&74:osword=&FFF1
220oswrch=&FFEE:osbyte=&FFF4
230colmix=&1100:spc=&44C:vpc=&480
240wpc=&45C:xpc=&460:ypc=&464
250MODE7:PROCass:PROCchkes
260CALL chanl:CALL trup
270A%=colmix:B%=mixes:C%=col1:E%=col2
280E%=colchoice1:F%=colchoice2:G%=getpos
290H%=getpix:I%=showcol:J%=once
300K%=cstore:L%=getore:M%=pixcol
310N%=joystick:O%=button:P%=jsk:R%=jay
320S%=spr:T%=fill:U%=cleac:X%=fi
330VDU23,1,0;0;0;0;
340VDU12,132,157,130:PRINT" (c) 1985";
350VDU141,31,15,0:PRINT"RAINBOW +";
360VDU140,31,28,0:PRINT"Cy Noble"
370VDU132,157,155,141,31,15,1
380PRINT"RAINBOW +":PRINT
390VDU129,157,133
400PRINT"Free area option:  "CHR$156
410PRINT" Hold down fire button & move cursor"
420VDU129,157,133
430PRINT"Shape options:  "CHR$156;
440VDU136,129,69,157,130
450PRINT"Area option";
460PRINTTAB(3)"<L> = Line"TAB(22)"<T> = Triangle"
470PRINTTAB(3)"<R> = Rectangle"TAB(22)"<C> = Circle"
480VDU129,157,135:PRINT"Key options "CHR$156
490VDU129,32,32:PRINT"<f keys 0-9>"CHR$135;
500PRINT"GCOL"CHR$129"(key"CHR$130",colour"
510PRINT"<Keys 1-7> Select line/shape colours"
520PRINT"<TAB> Select fill colour"
530PRINT"<B> Fill colour in BARS"
540PRINT"<S> Fill colour SPREAD"
550PRINT"<O> Fill colour OPENED (stripes)"
560PRINT"<0> Fill colour At original after above"
570PRINT"<P> Palette test area clears"
580PRINT"<G> Dot spray near cursor in +/g colour"
590PRINT"<M> Multi-colour dot spray"
600PRINT"<J> Joystick/Cursor toggle switch"
610PRINT"<RETURN> fills shape around cursor"
620PRINT"<DELETE> Delete screen (clear it)"
630PRINT"<COPY> Copy screen to/from disc/cassette<A> Test at cursor  <F> Finish program"
640PRINTTAB(6)CHR$129;CHR$134;"<SPACE> WHEN READY";
650*FX21,0
660REPEATUNTILGET=32
670CHAIN"RAIN2"
680END
690:
700DEFPROCass
710FOR PASS=0TO1:P%=colmix:[OPT PASS*2
720.colmix:LDA &67:STA screen+1
730LDX#255:STX once:INX
740STX mixflag:STX col2:STX screen:INX
750STX col1:INX:STX scratch
760.mixes \ call here if mixing only
770LDA col1:STA col1held
780LDA col2:STA col2held
790.MIXER \ colours in col1 col2
800 \ 0 in mixflag at start
810 \ FF in once for boxes or 0
820 \ for six colours only
830LDA mixflag:EOR #255:STA mixflag
840LDX#8:LDA #0:CLC
850.MELD:ROL col1:ROLA
860ROL col2:ROLA
870DEX:BNE MELD
880BIT mixflag:BPL mixin2
890STA mix1:STA colchoice1:JMP tcolo
900.mixin2:STA colchoice2:STA mix2
910.tcolo
920LDA col1held:STA col2
930LDA col2held:STA col1
940LDA mixflag:BMI MIXER
950LDA col1held:STA col1
960LDA col2held:STA col2
970BIT once:BMI chkdup
980RTS
990.chkdup:LDA col2:CMP scratch:BCS ok
1000 scrmvy:LDY #31
```

```
1010 screenit:LDA mix1
1020STA (screen),Y
1030LDA mix2:DEY:BMI morescreen
1040STA (screen),Y:DEY:BPL screenit
1050.morescreen:LDA screen:CLC
1060ADC #32:STA screen
1070BCC mk1:INC screen+1
1080.mk1:INC col2:LDA col2
1090STA col2hold:CMP #8:BEQ OK2:JMP MIX
ER
1100.OK2:LDA #0:STA col2:STA col2hold
1110INC scratch:INC col1:LDA col1:STA c
ol1hold
1120CMP #4:BCS retn:JMP MIXER
1130 retn:LDA #0:STA mixflag:RTS
1140\ restore mixing for next call
1150:
1160\ start of fill routines
1170.getpos
1180LDX oldxcrd MOD256
1190LDY oldxcrd DIV256
1200LDA #13:JSR osword
1210RTS
1220.getpix
1230LDX xcoord MOD256
1240LDY xcoord DIV256
1250LDA #9:JSR osword
1260LDA pixcol:STA col1
1270INC ycoord:INC ycoord:INC ycoord:IN
C ycoord
1280LDX xcoord MOD256
1290LDY xcoord DIV256
1300LDA #9:JSR osword
1310LDA pixcol:STA col2:LDA #0
1320STA mace:JSR mixem
1330RTS
1340.clearscl:LDY#71:LDA#0
1350 clsh:STA(cscreen),Y
1360DEY:CPY#63:BNE clsh:LDA#0
1370 clsh2:STA(cscreen),Y
1380DEY:BPL clsh2
1390LDA#250:STAwpc:LDA#A2:STAvpc
1400JSR fill:RTS
1410.joystick
1420LDA#0:LDX#3
1430.clcds:STA jsx,X
1440STA wpc,X:STA vpc,X
1450DEX:BPL clcds
1460LDX#0:STX button:LDY#1
1470LDA#128:JSR osbyte:CLC
1480TXA:RORA:ROL button
1490RORA:ROL button
1500LDX #1:LDA#128
1510JSR osbyte
1520STX jsx:STY jsx+1
1530LDX #2:LDA#128
1540JSR osbyte
1550STX jsy:STY jsy+1
1560LDX #5:CLC \ do jsy/64
1570.adjy:LDA jsy+1:ROR jsy
1580DEX:BNE adjy
1590LDA jsx:STA dividend
1600LDA jsx+1:STA dividend+1
1610LDA #51:STA divisor:LDA #0
1620STA divisor+1:JSR divide
1630LDA dividend:STA jsx
1640LDA dividend+1:STA jsx+1
1650\ do xmc -1079 &FF
1660LDA #255:SEC:SBC jsx:STA jsx
1670LDA #4:SBC jsx+1:ROR jsx
1680LDA #0:STA jsx
1690.jxmk:STA jsx+1:LDX#1
1700.storexvpc
1710LDA jsx,X:STA wpc,X
1720LDA jsy,X:STA vpc,X
1730DEX:BPL storexvpc
1740RTS
1750:
1760.divide:LDA#0:STA dividend+2
1770STA dividend+3:LDX#16:CLC
1780.dividbit
1790ROL dividend
1800ROL dividend+1
1810ROL dividend+2
1820ROL dividend+3
1830.checklft
1840SEC:LDA dividend+2
1850SBC divisor:TAY
1860LDA dividend+3:SBC divisor+1
1870BCC deccount
1880STY dividend+2
1890STA dividend+3
1900.deccount
1910DEX:BNE dividbit
1920ROL dividend:ROL dividend+1
1930CLC:RTS
1940 fill:LDA#0:STA upflag:STA downflag
1950LDA vpc:STA vpc+1
1960LDA wpc:STA wpc+1
1970\ upper two bytes store startddr
1980LDA colchoice1:CMP colchoice2
1990BCS upone:PHA:LDA colchoice2
2000STA colchoice1:PLA:STA colchoice2
2010 upone:JSR upaline:BIT upflag
2020BMI downone:JSR doline:JMP upone
2030 downone:LDA wpc+1:STA wpc:DEC wpc
2040.downok:JSR downaline
2050BIT downflag:BMI out
2060JSR doline:JMP downok
2070.out:RTS
2080:
2090 doline:LDA wpc:BMI doline2
2100.upread:LDA#4:STA divisor:LDA wpc
2110STA dividend:LDA#0:STA divisor+1
2120STA dividend+1:JSR divide
2130LDA dividend+2
2140CMP#2:BCS tocol2:BCC docol1
2150 docol1:LDA colchoice1:BNE stpscl
2160 docol2:LDA colchoice2:JMP stpscl
2170 doline2:CLC:LDA wpc:LDA#4:BCC cc2
2180LDA colchoice1:BNE stpscl
2190 cc2:LDA colchoice2
2200 stpscl:BIT vpc+3:BMI rf
2210PHA:CLC:LDA wpc:LDA#:BCC rfok
2220PLA:LDA#0:BEQ rf
2230 rfok:PLA
2240.rf:STA pixcol:LDA vpc+1:STA vpc
2250 rightfill:JSR calcadr:LDY#0
2260LDA (screenadr),Y:BNE chkrt
2270LDA pixcol:STA (screenadr),Y
2280INC vpc:LDA vpc:CMP#80
2290BCC rightfill
2300.chkrt:LDA (screenadr),Y:AND #&A0
2310BNE leftfill:LDA pixcol:AND #&A0
2320CLC:ADC (screenadr),Y
2330STA (screenadr),Y
2340 leftfill:LDA vpc+1:STA vpc
2350 left2:DEC vpc:BMI doneleft
2360JSR calcadr:LDY#0
2370LDA (screenadr),Y:BNE chklft
2380LDA pixcol:STA (screenadr),Y
2390BNE left2
2400 chklft:LDA (screenadr),Y:AND#&55
2410BNE donelett:LDA pixcol:AND #&55
2420CLC ADC (screenadr),Y
2430STA (screenadr),Y
2440.donelett:RTS
2450\vpc wpc are single byte X Y
2460\coords x max 80 y max 208
2470 calcadr
2480LDA #0:STA scratch+1:STA screenadr
2490LDA vpc:ASL A:ASL A:ROL scratch+1
2500ASL A:ROL scratch+1:STA scratch
2510LDA wpc:AND #&F8
2520LSR A:LSR A:STA screenadr+1
2530LSR A:LSR A:ROR screenadr
2540ADC screenadr+1:PHA
2550LDA wpc:AND #7:ADC screenadr
2560ADC scratch:STA screenadr:PLA
2570ADC scratch+1:ADC #&30
2580STA screenadr+1
2590RTS
2600:
2610.upaline
2620LDA wpc+1:STA wpc
2630DEC wpc:BNE lcal
2640.outup:LDA#&255:STA upflag:RTS
2650 lcal:JSR calcadr:LDY#0
2660LDA(screenadr),Y:BNE outup
2670RTS
2680.downaline
2690LDA wpc+1:STA wpc:INC wpc
2700BNE lcal2
2710 outdown:LDA #&255:STA downflag:RTS
2720 lcal2:JSR calcadr:LDY#0
2730LDA (screenadr),Y:BNE outdown
2740.ok2:RTS
2750.clean:LDA#&7C:JSRosbyte:RTS
2760.li:LDA#22:JSR oswrch:LDA#7
2770JSR oswrch:JMP&FFEE:BRK
2780.chan1:LDX#2:LDY#0:LDA#&80
2790JSR osbyte:LDA#16:LDX#2
2800JSR osbyte:RTS
2810:
2820.col1:nop
2830.col1hold:nop
2840.col2:nop
2850 col2hold:nop
2860 mix1:nop
2870 mix2:nop
2880 mixflag:nop
2890 mace:nop \ if two only mix cols
2900 oldxcrd:NOP:NOP
2910 oldycrd:NOP:NOP
2920 xcoord:NOP:NOP
2930 ycoord:NOP:NOP
2940.pixcol:NOP
2950 button:NOP
2960 jsx:NOP:NOP
2970 jsy:NOP:NOP
2980.divisor:NOP:NOP
2990 dividend:NOP:NOP:NOP:NOP
3000 colchoice1:NOP
3010 colchoice2:NOP
3020 upflag:NOP
3030.downflag:NOP
3040 scratch
3050EQUS"0123456789012345" \16 bytes
3060]:pc%=P%:P%=trup
3070[OPT 2%0#2
3080 trup:SEI
3090LDA&220:STA&230
3100LDA&221:STA&231
3110LDA#keyboard MOD256:STA&220
3120LDA#keyboard DIV256:STA&221
3130CLI:LDA#&40:STAcscreen
3140LDA#&7F:STAcscreen+1
3150 keyboard
3160CMP#4:BEQ whichkey
3170JMP(&230)
3180 whichkey:PHA:TXA:PHA:TYA:PHA
3190LDA#EC:BNE tryme:JMP end
3200 tryme:SEC SBC#128
3210CMP#&27:BEQ color0
3220CMP#&30:BEQ color1
3230CMP#&31:BEQ color2
3240CMP#A11:BEQ color3
3250CMP#&12:BEQ color4
3260CMP#&13:BEQ color5
3270CMP#&34:BEQ color6
3280CMP#&24:BEQ color7
3290CMP#&20:BEQ gcolor0
3300CMP#&71:BEQ gcolor1
3310CMP#&72:BEQ gcolor2
3320CMP#&73:BEQ gcolor3
3330CMP#&14:BEQ gcolor4
3340CMP#&37:BEQ clearp
3350JMP end
3360.color0:LDA#0:BEQ texcolor
3370.color1:LDA#1:BNE texcolor
3380 color2:LDA#2:BNE texcolor
3390 color3:LDA#3:BNE texcolor
3400 color4:LDA#4:BNE texcolor
3410.color5:LDA#5:BNE texcolor
3420 color6:LDA#6:BNE texcolor
3430.color7:LDA#7:BNE texcolor
3440.gcolor0:LDA#0:BEQ gcolor
3450 gcolor1:LDA#1:BNE gcolor
3460.gcolor2:LDA#2:BNE gcolor
3470 gcolor3:LDA#3:BNE gcolor
3480 gcolor4:LDA#4
3490 gcolor:STA gstore:JMP dogcolor
3500.texcolor:STA cstore
3510LDA #17:JSR oswrch
3520LDA cstore:BNE oktex
3530LDA#15: oktex:JSR oswrch
3540 dogcolor:LDA #18:JSR oswrch
3550LDA gstore:JSR oswrch
3560LDA cstore:JSR oswrch
3570 end:PLA:TAY:PLA:TAX:PLA
3580JMP(&230)
3590 clearp:LDY#159:LDA#0
3600 clearp2:STA (cscreen),Y
3610DEY:CPY#71:BNE clearp2:BEQ end
3620.cstore:EQUB 6
3630 gstore:EQUB 0
3640]
3650NEXT:ENDPROC
3660DEFPROCchksm
3670chk1%=0:FORck%=colmix TO scratch
3680chk1%=chk1%+?ck%:NEXT
3690IFchk1%=103710 THEN 3710
3700PRINT"Error between 680 & 3080":STO
P
3710chk1%=0:FORck%=trup TO gstore
3720chk1%=chk1%+?ck%:NEXT
3730IFchk1%=26904 THEN 3750
3740PRINT"Error between 3080 & 3280":ST
OP
3750ENDPROC
```

Arcade Avenue



Map tips

I've had a letter from yet another strange pseudonym, a Mr Bones Pl-35 "otherwise known as Kon Petrusewicz" containing hints and tips and also a map for "Design-Design's wonderful, fantastic, brilliant and generally very good *2112 AD*"

From what I've seen of *2112*, Bones is not entirely unjustified in his praise, it's a nicely animated and comical game reminiscent of *Marsport* and with some nice problems, or at least there were some problems until now

Here, for your benefit, are Bones's tips, minus the map unfortunately, which was very nicely colour coded and hence not very easy to reproduce in a black and white magazine I've managed to fit all the information contained into a table form so you'll just have to draw the map out yourself

Can I just use this opportunity for passing on one or two hints about map drawing I am obviously grateful to receive your drawings, but it is sometimes a real problem trying to convert them into something that we can reproduce in the magazine

Marsport – inspiration for *2112AD*

Being a weekly we like to try and keep topical and as up to date with your letters as we can, and it really is more likely that your work will be published if it is relatively neat, and very importantly drawn on blank paper rather than lined or graph paper

Also, if your handwriting is a bit illegible, just number the rooms, etc and use a key Finally, remember that this is a black and white magazine

I want to express my thanks to everyone who has sent in maps before.

If you haven't seen them in print don't think that we don't appreciate the hard work that you have put in

Those who have a copy of the *Arcade Champions Guide* may well find that your maps are reproduced there – it was a long term project and we had time to work on your drawings properly.

Anyway, lets get on with *2112*. Here are the tips,

1 Poddy is useless so don't bother moving him from the start.

2 Locked doors are unlocked with keys and credit cards – see the map details for more information

3 You can carry three objects, but always have the first aid kit

4 If you have a can opener and a can you can eat (using the *Eat* icon)

5 Two of the rooms are dark and you need to carry a light bulb to see

6 The robots are not much of a problem unless you hit them in which case you are immobilised Use the First Aid Kit

7 The codes are set into walls Just walk into them and pick them up

8 From what I can tell, the bombs, the calculator and the battery are useless, at least to finish the game The fuses are to repair Poddy when you overcharge him However, if you leave him at the start you won't need to charge him at all

9 The code sequence changes each game, but I think the codes stay in place each game.

Finally, Bones has a couple of other comments – unlike most Design games this has no highscore chart, but the ones in *Forbidden Planet* are excellent. Try *Dark Star* and the obvious swear words

Also there is a bug in some *Thor's Arc of Yesod* which makes it unplayable – if you drop a bomb in a room in a floor, it crashes when an alien materialises into the floor Bad news if true on all copies

Tony Kendle

The Map

Draw a grid of six rooms across by seven rooms down, with enough space between the rooms to draw in some connecting lines (not all the spaces on the map will be filled with a room) Number them 1 to 7 downwards and A to F from left to right. The start is room C3.

EXITS

A2 Top to B2
B2 Top to A2 Left to C2 (need a Legge key)
B3 Left to B4 (need a cashpoint card), Right to C3 (the start).
B4 Left to B3 (cashpoint), Top to D4
B5 Top to C4 Right to C5.
B7 Left to F7.
C1 Top to D2 Right to D1.
C2 Top to D1. Right to D2. Left to B2 (Legge key)
C3 Left to B2 Top to D3 Right to E4
C4 Left to B5 Right to D4
C5 Left to B5. Top to D5
C7 Top to B7 Right to E7
D1 Top to C2 Left to C1
D2 Top to C1 Left to C2.
D3 Top to C3 Right to D2. Left to E2 (Barclaycard)
D4 Left to C4 Right to B4
D5 Top to C5
D6 Left to D7. Right to E6.
D7 Left to D6. Right to E7 (Yale key).
E1 Right to F1
E2 Top to F2. Left to D3 (Barclaycard).
E3 left to E4 Right to F3 (Access card)
E4 Right to C3 Left to F4 (Chubb key)
E5 Top to F6 Right to F4
E6 Left to D6 Top F6
E7 Top to C7 Right to F7 Left to D7 (Yale key).
F1 Left to E1 Top to F2 (Chubb key).
F2 Left to E2 Right to F1 (Chubb key).
F3 Top to E3 (Access card(Right to F4 (Cashpoint)
F4 Left to E5. Top to F2 (Cashpoint). Right to E4 (Chubb key)
F6 Left to E6 Right to E5
F7 top to E7 Right to B7
Dark rooms are D4 and E2.
Cans are in A2, B5, C1, C2, C3, C5, D1, D4, D5, E3, E4, E6, E7, F2 and F6
Light bulbs are in A2 and D5
Bombs are in A2, B3, E2 and F7
Can opener is in C1
Cashpoint card is in C2
Barclaycard is in C4
Legge card is in D3
Chubb key is in D6
Yale key is in F1
Access card is in F2.
Fuses are in C3, D2, D4, E2 and E5
Battery is in F7
Electric darboard is in B2, C3, C5, D3 and F1
Code 5 is in B2 Code 7 is in B4, Code 8 is in B7, Code 0 is in C5, Code 1 is in C7,Code 9 is in D7, Code 2 is in E1, Code 6 is in E2Code 3 is in F3 and code 4 is in F4.
Robots are in B2, B4, C1, C4, D1, D3, D5, E3, F1, F2 and F4
Plugs are in B3, B4, C2, D1, E2, E4, E5, F1 and F3

REWARDING OPPORTUNITIES WITH MIKRO-GEN

Following Mikro-Gen's move to new premises we now require additional staff. If you believe your programming ability meets our high standard, please contact us by telephone or letter to the address below.

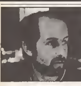
We also require finished programmes. Top payment or royalties given to software of suitable quality.

Mikro-Gen, Unit 15, The Western Centre, Western Road, Bracknell, Berks. RG12 1RW. Telephone number (0344) 427317





Tony Bridge's Adventure Corner



Revived interest

The Grand Elf popped along to the Atari Show a couple of weeks ago, at London's Novotel it was like a scene from Dante's *Inferno*, as the hotel's management had decided that we computer enthusiasts weren't worth wasting the air-conditioning on, despite the 30 × £450 (the number of exhibitors × the cost of a stand) which was their haul from the three day sauna

The ST has obviously revived interest in the Atari range, and the packages now available after just a few months bode well for the future of the machine. Infocom have committed themselves to the ST, and all their adventures are now available, including *Bally-Hoo* and *A Mind Forever Voyaging*, neither of which I've seen, but both of which have drawn the usual accolades

The latter sounds particularly interesting, having a lot in common, I'm told, with one of my all-time favourites, *Suspended*, casting the player in the role of a super-computer (though it requires 128K, so it will remain a mystery to most of us)

Sensational

Nearer home (at the end of the M4, in fact), Level 9 have nearly finished their new brilliance, *Magick*, and had a nearly-finished version running on the ST Although some of the graphics and responses weren't complete, Elfie had a quick bash-around, and he can tell you that it is going to be sensational.

A strong D&D influence, as well as very atmospheric exploration of an old, creepy house in search of magic spells and creatures to use them on, is sure to give the Austins their next winner (have they ever had a *non*-winner?)

Versions for all machines should be available in a couple of weeks, so watch this space

Now to a couple of Quill'd adventures The Elf's mailbag is filled every week with tapes from you readers containing your adventures, and although I look at them all, it is sometimes many months before I get round to mentioning each one – please forgive me, then, if you have been waiting to see your effort discussed.

Mandarin Adventures of Woking are a new name on the adventuring scene (the name, they tell me, was chosen for the simple fact that their adventures are the best available, what modesty!), and their first program is *Time of the End*. It's Quill'd, and concerns the future of "not too far ahead, when the fabric of society is crumbling as the Earth reels under a series of cataclysmic events – earthquakes, meteors, tidal waves and volcanoes".

Little do the inhabitants of Earth realise that these disasters are deliberately caused by powerful alien beings who are playing a demented game with Earth to overcome the boredom of infinity The opening screen of the game includes a quotes from T S Eliot "This is the way the world ends/not with a bang but a whimper"

Wind-swept city

The adventure starts as you are wandering around a wind-swept city, exploring desolate bomb sites and reading colourful graffiti. After a few locations and fewer collectable objects, you'll find a silver orb hovering ominously above your head

Getting it transports you, via a few colourful screens, to an alien lab, where alien experimentors seem intent upon dissecting your body for their own fiendish ends You can escape their clutches, however and indulge in a bit more exploring before you finally are recaptured and transformed into your second reincarnation.

If you're crafty, you will eventually be able to return to the locations at the start of the adventure and re-explore, this time round, you'll be able to accomplish more if you keep your wits about you.

The main program is on Side One of the cassette Side Two contains a little database, also written on *The Quill*, containing verbs recognised by the main program, a general run-down on adventure commands, as well as background to the story.

The use of *The Quill* as a database (that is, locations contain information rather than standard descriptions) is a fairly obvious application, but one that is not often seen. Maybe more writers should use it, as it certainly adds to an adventure

Atmospheric

At £3 95, I feel that *Time of the End* is a little over-priced, by about a pound. However, it is a good romp and fairly atmospheric with some nice descriptions and plenty of literary quotes (á is T S Eliot) I didn't find any spelling or grammar mistakes, and I liked the re-incarnation idea, in which previous searched locations reveal more goodies

You can contact the company at *Mandarin Adventures 14 Langton Close, Woking, Surrey GU21 3QJ*

The Lentils of Thry is an intriguingly-named adventure from the Quill of Peter Page he says that it has absolutely nothing to do with hippies (oh, why not, Peter?) Although he intends to include graphics, he hasn't done so yet and seems a little disapproving of pictures.

The game (which is the first of a two-parter a biology?) has been *Patch'd*, one of the first such adventures that I've seen, so it's a little more interesting than the usual run of Quill'd games, offering Ramsave and Ramload and interchangeable fonts

Side issues

On loading, you are told that "Every day you must say, so how do I feel about my shoes? They make me awkward and plain". That's it, apart from a credit to *The Quill* and Andy and Richard for play-testing

As Billy Wycheway, the pathetic guard of the lentils, you have to recover the priceless baubles from Jemima, horrid queen of Solitary, thus making amends for your incompetence in allowing her to get away with them.

Along the way, you're going to have a lot of fun. The loading screen is credited to Picasso, and is quite artistic – does it contain clues? I don't know, but I do know that the adventure itself is nicely implemented with brief, funny and colourful descriptions, disembodied voices telling you to get on with it, lots of "dead, slimy things" and other goodies to get.

The puzzles are not too difficult, but there are lots of diverting side issues to get involved in, so that even with the full solution, there's plenty to do

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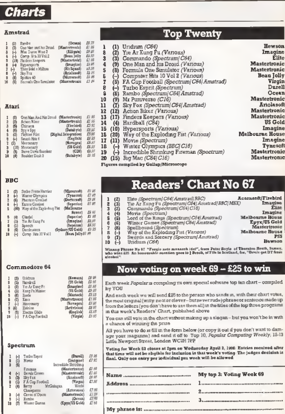
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All figures compiled by Gallup/Microscope

Top Twenty

1	(1)	Uridium *(C64)*	Hewson
2	(2)	Yie Ar Kung Fu *(Various)*	Imagine
3	(3)	Commando *(Spectrum/C64)*	Elite
4	(9)	One Man and his Droid *(Various)*	Mastertronic
5	(8)	Formula One Simulator *(Various)*	Mastertronic
6	(–)	Computer Hits 10 Vol 2 *(Various)*	Beau Jolly
7	(5)	FA Cup Football *(Spectrum/C64/Amstrad)*	Virgin
8	(–)	Turbo Esprit *(Spectrum)*	Durell
9	(6)	Rambo *(Spectrum/C64/Amstrad)*	Ocean
10	(9)	Mr Puniverse *(C16)*	Mastertronic
11	(7)	Sky Fox *(Spectrum/C64/Amstrad)*	Ariolasoft
12	(12)	Action Biker *(Various)*	Mastertronic
13	(17)	Finders Keepers *(Various)*	Mastertronic
14	(4)	Hardball *(C64)*	US Gold
15	(10)	Hypersports *(Various)*	Imagine
16	(20)	Way of the Exploding Fist *(Various)*	Melbourne House
17	(11)	Movie *(Spectrum)*	Imagine
18	(–)	Winter Olympics *(BBC/C16)*	Tynesoft
19	(–)	Incredible Shrinking Fireman *(Spectrum)*	Mastertronic
20	(15)	Big Mac *(C64/C16)*	Mastertronic

Figures compiled by Gallup/Microscope

Readers' Chart No 67

1	(2)	Elite *(Spectrum/C64/Amstrad/BBC)*	Acornsoft/Firebird
2	(3)	Yie Ar Kung Fu *(Spectrum/C64/Amstrad/BBC/MSX)*	Imagine
3	(2)	Commando *(Spectrum/C64/C16)*	Elite
4	(4)	Movie *(Spectrum)*	Imagine
5	(5)	Lord of the Rings *(Spectrum/C64/Amstrad)*	Melbourne House
6	(6)	Winter Games *(Spectrum/C64/Amstrad)*	Epyx/US Gold
7	(8)	Spellbound *(Spectrum)*	Mastertronic
8	(–)	Way of the Exploding Fist *(Various)*	Melbourne House
9	(7)	Swords and Sorcery *(Spectrum/Amstrad)*	PSS
10	(–)	Uridium *(C64)*	Hewson

Winning Phrase No 67 "Fergie nets monarch idol", from Peter Boyle of Thornton Heath, Surrey, who wins £25. An honourable mention goes to J Brook, of Fife in Scotland, for, "Devils got DT from alcohol"

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Voting for Week 69 closes at 2pm on Wednesday April 2, 1986. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed

Name .... **My top 3: Voting Week 69**

Address .... 1...

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My phrase is: ....

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MARTIAL ARTS

The Way of the Tiger is yet another martial arts program, but it has significant differences of presentation such that it looks more like Gargoyle's *Dun Durach* than *Exploding Fist*.

Instead of meeting a series of adversaries statically, on a set background, combat in *Tiger* happens as you move across a scrolling landscape – a little like *Fighting Warrior* from Melbourne House

It may seem a slight difference since the art of the game is still to use a series of blows to beat the other guy's brains out but actually the feel of the game is very different The changing background gives a sense of 'going somewhere' which adds, for me at least, a greater sense of mission to the game and therefore makes the battles all the more adrenalin raising

The other unusual aspect to the game is its size – two cassettes worth That provides for various kinds of combat as well as a wide variety of backgrounds later sections allow for beating baddies over the head with sticks and slashing them to ribbons with Samurai swords

The detail is every bit as good as *Dun Durach* and I'd say *Way of the Tiger* has more than enough new features to recommend its purchase, even to those with half a dozen martial arts games already

Program *The Way of the Tiger*
Price *£9 95*
Micro *Spectrum/Amstrad*
Supplier *Gremlin Graphics*
Alpha House
10 Carver Street
Sheffield
S1 4FS

FUNCTIONS

QL Paragon is an extremely neat utility program that provides a number of features available whilst other programs are actually running Once loaded *Paragon* sits in memory, constantly available, but unaffected by other programming work

Paragon, once called, presents a strip of icons on screen from which various functions may be selected. Some are fairly mundane – a clock's features you must initiate each session – others are far more interesting One offering is a calculator function, where selecting the appropriate icon brings a graphic of a calculator up on screen

Pick of the week

RESCUE ROBIN

Batman is an unexpected program. Unexpected because film and TV tie-ins usually have so much effort and money spent on the promotional advertising that there is nothing left for the game With *Batman* there has been relatively little advance publicity and the game is beautifully crafted.

It is, of all things, a *Knight Lore* variety Same 3D perspective, same 'push things around and put them on top of one another' to solve the puzzles, same kind of highly detailed graphics

Versions arrived in the office for both the Spectrum and Amstrad and one thing is becoming clear – some kinds of Amstrad games are more impressive than their Sinclair equivalents. For a long while the Amstrad editions of games were last minute conversions of the Spectrum originals now programmers have realised that the graphics and sound facilities of the Amstrad mean you can do everything you can do with the Spectrum with more colour and continuous sound

Batman has the usual plot collect pieces of (insert name here = batcraft) in order to (task = rescue Robin but who'd want to), dodge the countless alien hoards and collect the batboots, batthruster, low gravity batbelt and assorted batpills

The screens are beautifully detailed, depicting a series of caves and caverns The monsters are even better, gone are the featureless blobs of yesteryear, these monsters come with assorted beards, fangs and gucci boots There are the inevitable odd objects to jump on and off, (if you have the boots) and nasty conveyor belts that drag you in odd directions

Another nice touch is a save game option, not an automatic cop-out for the faint-hearted, but a facility that is available if you manage to touch one of a number of reincarnation stones littered about the place

There are other thoughtful touches like a feature to vary the sensitivity of the joystick – set a low sensitivity if you are a beginner and you reduce the chances of hurtling into a bottomless pit

An excellent program that deserves to do very well indeed.

Program *Batman*
Price *£7 95 (Spectrum)*
£8 95 (Amstrad)
Micro *Spectrum/ Amstrad*
Supplier *Ocean*
6 Central Street
Manchester

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Swords and Sorcery	S	Amstrad	£9 95	PSS
Music Minstrel	Ut	Amstrad	£14 95	Kuma
Karate Combat	S	BBC	£11.95	Superior
Electronic Scheduler	Ut	Commodore 64	£7 95	Bug Byte
Bored of the Rings	Ad	Commodore 64	£7 95	CRL
30 Games	Arc	Commodore 64	£9 95	Argus
Dr Who + Mines of Terror	Arc	Commodore 64	£11 95	Micropower
Smashes Vol 2	Arc	Commodore 64	£6 95	Gremlin Graphics
Archon II	S	Commodore 64	£12 95	Ariolasoft
Family Tree	Ut	Commodore 64	£7.99	Bug Byte
Home and Business Card Fil	Ut	Commodore 64	£7 95	Bug Byte
Masterword	Ut	Commodore 64	£7.99	Bug Byte
Personal Spreadsheet	Ut	Commodore 64	£7 95	Bug Byte
Pro Financial Organiser	Ut	Commodore 64	£7.99	Bug Byte
Utility Disc	Ut	Commodore 64	£7.99	Bug Byte
gBase	Ut	Commodore 64	£7 95	Bug Byte
Character Toolkit	Ut	QL	£6 00	Smiling Software
Complete Toolkit	Ut	QL	£20 00	Smiling Software
Smiling Games Toolkit	Ut	QL	£8 95	Smiling Software
The Assembler Workbench	Ut	QL	£24 95	Talent
Advanced Swords and Sorc.	Ad	Spectrum	£14 95	PSS
Doomsday Papers	Ad	Spectrum	£6 95	Matand Software
Smashes Vol 1	Arc	Spectrum	£6.99	Mirrorsoft
The Lost Phirious Pt 1	Ad	Amstrad	£2.99	Vidipix

Key: Ad – adventure S – strategy simulation
Arc – arcade Ut – Utility Ed – education

This sounds trivial but isn't – you get the equivalent of a complex scientific calculator which will convert hex/binary, do Xor operations and so on – a valuable programmer's tool.

Another useful feature is a sophisticated screen dump, where the actual portion of screens to be dumped is defined by a pair of parallel rulers. It means, obviously, that you may simply dump the section of display you are most interested in.

There are many other examples and all feature what Eigen are keen to stress is true windowing and icons – you may, for example, shunt any one of the displays, eg, calculator, around the screen as you wish.

The whole package works well, is neatly displayed and is genuinely useful. For some programmers the instantly available advanced calculator features alone would probably justify the price

Program *QL Paragon*
Price *£19.95*
Micro *QL*
Supplier *Eigen Software*
45 Bancroft Road
Widnes
Cheshire
WA8 0LQ

VICIOUS

It certainly isn't easy distinguishing between one martial arts game and another these days It isn't easy to find something new to say about each one.

Fortunately, *Sai Combat* on the Spectrum from Mirrorsoft is one of the best in fact, I tend to prefer it over the Spectrum version of *Exploding Fist.*

There are two essential ingredients to a good martial bash'n'thrash, the first is that it should start relatively easy – you shouldn't have to thoroughly master some 16 different moves in order to defeat the first couple of opponents The second point is violence, there should be lots of it. Blows should look and sound like they hurt (that humans should like such things is a knotty sociological problem too large for the consumer computer press, treat it as a fait accompli and write to your MP)

Blows in *Sai Combat* involve large sticks, a correct hit is rewarded with a most effective thud that sounds like someone falling on to a pile of cardboard boxes – the sting of the blow is graphically represented by a flash of red or green light at the affected area

General game format is pretty much pure *Exploding Fist* Two warriors thrash each other over a variety of changing picturesque backdrops

As you win a round, so the difficulty level increases and at later levels vicious Ninja Stars get chucked around which should, needless to say, be avoided.

Sai Combat is definitely one of the best martial arts games on the Spectrum and is worth buying even if you have a couple of the others.

Program *Sai Combat*
Price *£6.95*
Micro *Spectrum*
Supplier *Mirrorsoft*
Headington Hill
Hall
Oxford
OX3 0BW

WONDERFUL

Zoot may be the perfect budget game It is simple, lacking even the shortest of manuals, or most cursory of maps, but holds the interest long after many a more hi profile game has fallen by the wayside

Zoot looks like a pretty standard arcade game, but actually requires strategic thought rather than fast reactions, and although the rules are simple winning isn't!

It's a platforms and ladders game without ladders, instead some of the sections that make up the paving stones act as lifts that others can shunt across gaps

The different levels are inhabited by various sorts of large, rather sad looking monsters which glumpf wearily from section to section Though these pose a threat of sorts, it is comparatively easy to duff them up with a single blow to the jelly

That, though, isn't the point – the point is to manage to get to all the appropriate sections of the screen without leaving yourself trapped The problem is that as you use sections of platform as elevators, they disappear on reaching the next level down. If you reach the bottom of the screen you can only get back up to the top if there is a platform in the same column as your section at the top

It sounds complicated and is, in the sense that planning your route across the screen gets to be quite a complicated business

There are various levels in some you must reach and destroy all monsters, in others you have to isolate each monster by leaving it with only one square to stand on and so on

Not only is the game oddly addictive, it also has some excellent sound effects including some of the best sampled speech I've ever heard on the Spectrum *Zoot* is wonderful

Program *Zoot*
Price *£2.95*
Micro *Spectrum*
Supplier *Bug Byte*
Liberty House
222 Regent Street
London
W1R 7DB

This Week

Argus, No 1 Golden Square, London W1R 3AB, 01-437 0626 **Ariolasoft,** 68 Long Acre, Covent Garden, London WC2 01-836 3411 **Bug Byte,** Liberty House, 222 Regent House London W1R 7DB, 439 0666 **CRL,** CRL House 9 Kings Yard Carpenter s Road, London E15 2HD, 01-533 2918 **Gremlin Graphics,** Alpha House 10 Carver Street Sheffield S1 4FS 0742 753423 **Kuma,** Kuma Computers 12 Horseshoe Park Pangbourne, RG8 7JW, 07357 4335 **Melbourne Software,** 29 Moorland Road, Mickleover, Derby DE3 5FX, 0332 513095 **Micro Power,** Northwood House Worth St, Leeds LS7 2AA, 0532 434006 **Mirrorsoft,** Mirror Group Holborn Circus, London EC1P 1DQ, 01-353 0246 **PSS,** 452 Stoney Stanton Road Coventry CV6 5DG 0203 667556 **Smiling Software,** 26 Dale Road Marple, Stockport SK6 6HA, 061 427 5245 **Superior,** Regent House Skinner Lane, Leeds LS7 1AX 0532 459435 **Talent,** Curran Building, 101 St James Road Glasgow G4 0NS 041 552 2128 **Vidipix,** 125 Occupation Road, Corby Northants NN17 1EG

Postman's knock

Are you bored with sitting at your micro playing a simple strategy game with the computer as your only opponent?

Do you want to explore the stars in a simulated starship, even though your home computer has not got the capacity for such software? Do you want to play the ultimate modern combat game? If your answer to these questions is yes then read on . . .

The answer to all your prayers could well be 'play by mail' gaming, commonly referred to as 'PBM' games. A PBM game is a multiplayer fantasy game played, literally, by mail.

Players post their move instructions to the game moderator (GM) who, by hand, computer, or a mixture of the two, processes the orders and posts the results back to the players – each result unique to each player.

These players then decide on their next orders, and so on. The players pay the moderator to process each set of orders.

Unlike single player games, the results of actions also depend upon the actions of other people.

What's more, you can enjoy the fruits of computer power far beyond that of your own micro (one game, *StarGlobe*, uses up over 8½ Mb of storage media!) without spending a penny on new equipment.

You don't even need to own a computer to play a PBM game – all processing is done by the GM.

So what is there available? Well, quite a variety.

My favourite is *StarGlobe*, a 3D game of interstellar travel. You are a starship captain playing against over 200 other ships in a universe of 2000 stars. You can play in a variety of roles – pirate, explorer, empire builder, bounty hunter, merchant and xenobiologist.

The game is never ending and very challenging – well worth a try at £1.60 per game turn.

A new game to the UK, imported from America, is *Global Supremacy*. It is set on a post-WWIII Earth. Many years after the holocaust, with the superpowers destroyed, 150 countries have developed late 1930s technology.

Each player rules one of these countries.

Your task is to gain global supremacy by defeating other players through clever diplomacy, careful economics, and great military strategy, and, of course, a fair amount of low running.

Instead of using a fantasy map you actually play using a world atlas, all physical features exist in the game. You have an incredible variety of military equipment – from infancy to aircraft carriers – to deploy around the world, and as the game progresses so do technology levels, eventually nations develop biological and nuclear weapons to use against each other once more.

It's very good albeit expensive, game costing between £7 and £16 per month to play.

Other games include *Vorcon Wars*, a very popular logistics related planet based strategy game (at £1 per turn, it's a very good introduction to PBM). *Capital*, a US science fiction game of strategic space warfare (minimum £1.75 per turn), *World Of Vengeance* is a tribal game where the player leads his group in a future Britain almost destroyed by plague (£1.50 per turn), and many more of a similar variety are available.

If you like the look of the hobby then I recommend you to buy one of the two magazines available for further details. They are *PBM Magazine* (£1 payable to Emjay, 17 Langbank Avenue, Rise Park, Nottingham NG5 5BU) and *Flagship* (£1.75 payable to Flagship, P.O. Box 12, Aldridge, Walsall, West Midlands WS9 0JJ).

If you join a game, then bear in mind that it takes a few turns for you to settle in to the style of gaming and for other players to get to know you. Once you've undergone your initiation, you may well get hooked.

Brendon Kavanagh

Puzzle No 201

The other day I purchased from our local second-hand book shop the *Complete Works of Shakespeare*, in eight volumes. It was a very attractive set of books and came complete with its own miniature bookcase.

1	2	3	4
5	6	7	8

Consider my annoyance on discovering, a few days later, that my young children had taken the books down and had rearranged them in the wrong order on the shelves! Curiously, the numbers of the eight volumes formed a fraction whose value came to exactly three – that is, the four digits on the books in the top of the bookcase represented the numerator and the bottom four the denominator. In addition to this none of the books occupied its correct position on the shelves.

Can you say how they were arranged?

Solution to Puzzle 196

The next hexagon which can be rearranged into a square contains 58 3884 41. The hexagon has 1455 rings, the square has sides of 2521 coins.

The answer was calculated using the following program.

```
10 FOR K = 100 to 100,000
20 LET N = 3 x K x K - 3 x K + 1
30 IF 100 000 x INT (SQR N) = INT (100,000 x
SQR N) THEN PRINT N, K, SQR N
40 NEXT K
```

Line 30 has to check for accuracy as SQR functions can be inaccurate by about 10^{-6}

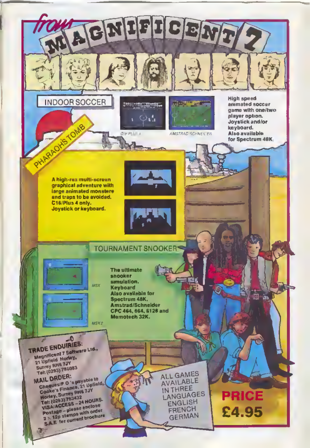
Winner of Puzzle No 196

The winner is Paul Rhodes of Ventnor Gardens, Luton, who will be receiving £10.

Rules

If the puzzle can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer. The closing date for Puzzle 201 is April 25.

The Hackers



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